Urban Food Production for Socio-Technical Transformations

The Helsinki Metropolitan Region Urban Food Production Niche and its potential for transitions towards more sustainable food production systems

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MA Creative Sustainability 2019

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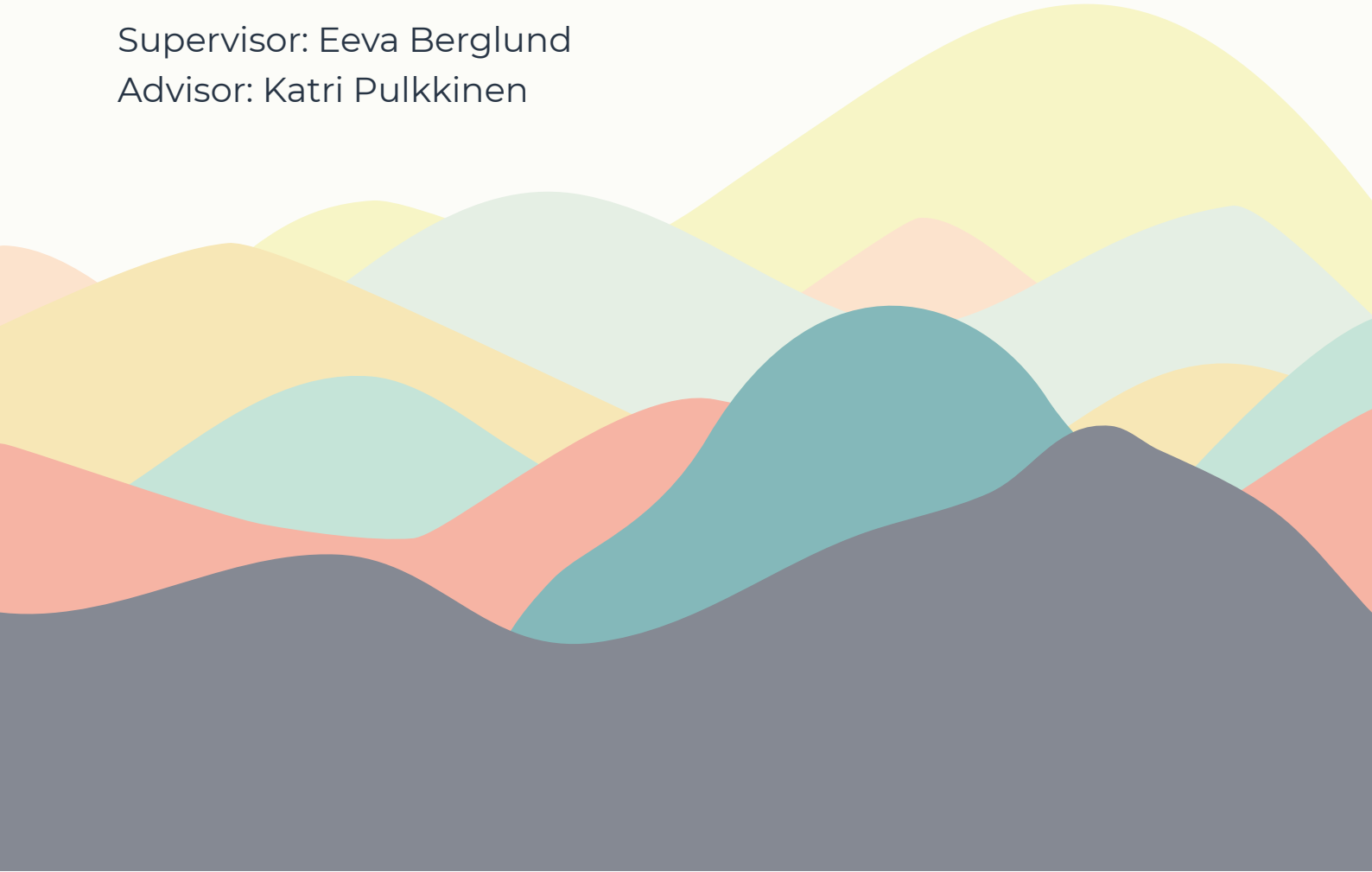


“At the heart of this unfolding transformation is a new story of place. Cities are catalysts of the system change we require. They can embody a new story about development and progress in which the health of biodiversity, food sheds, and watersheds are key indicators of success. A city is most healthy as a meeting place for change agents, outliers, and shadow networks. The healthy city is about participation, not spectacle. Connecting is itself a form of innovation.”

Jon Thackara, 2016

Abstract

According to the Food2030, the Finnish strategy for national food production, the aim is to produce the most sustainable food in the world. If the nation aims at making this strategy a reality, a transition in the industry needs to occur, in order to get there, the current ways of production must be replaced by innovative and sustainable systems of production. In order for this to happen policymakers, together with producers, researchers and everyone involved need to collaborate and explore innovative ways of production. In the strategy it is clearly stated that regional collaboration is essential for the strategy to succeed, nonetheless, looking closer to the Helsinki Metropolitan Region, there are no clear strategies from the cities of the capital region to put forward efforts in regards to the national strategy.

In the literature around urban transitions towards sustainability, the importance of local and national agreements is underlined. Cities consume most of the goods produced in the world, it is estimated that by 2050 80% of the food produced in the world will be consumed in cities, as predictions suggest that the rates of migration from rural areas to urban areas will only increase. Not to mention the worrisome predictions of the latest Intergovernmental Panel on Climate Change (IPCC) report suggesting climate change will, for example, increase the number of asylum seekers due to potential food shortages. For this reason, it is essential that national strategies are followed at local municipal level, where the characteristics suggest it is easier to have impactful action.

As for the context of the Helsinki Metropolitan Region, there are many innovations, startups and initiatives seeking to make urban food production and consumption more sustainable, but these niche innovations can do very little without a platform that supports them, encourages food innovations and enables pathways for alternative markets to reach more customers.

In this thesis, the local context is explored in order to find what are the challenges the niche innovators face and what is preventing a better local planning system that encourages alternative food production. The system is analyzed using the Multi Level Perspective framework envisioned by Rip & Kemp and adapted by Frank W. Geels as a descriptive tool to exemplify how socio-technological transitions unfold over a period of time and with pressures from actors in different levels.

A descriptive visualization of the system is created where the perceived barriers are defined as well as potential collaborations that could support a transition where the actors who are currently doing the work to envision a future where food is produced locally and sustainably, implement the national strategy at local level.

Keywords: *Urban food production, transitions towards sustainability, Helsinki Metropolitan Region, Multi-level perspective, sustainability transitions*

Acknowledgements

I would like to thank all the participants of the formal and informal interviews who gave me very valuable insights and guidance in my process: Kari Mikkelä, Janne Löppönen, Eija Lainonen,Tehilah Auramo, Elina Nummi,Chris Holtslag, Jaakko Lehtonen, Tania Rodriguez- Kaarto, Henri Laine, Riikka Kuusisto, Ronny Rantamäki, Olli Repo, Samuli Laurikainen, Pertu Karjalainen, Jan Luesaho, Joshua Finch, Lilli Linkola, Elina Wanne, Carlos Henriques, Jouni Spets, Päivi Piispa.

To my supervisor Eeva Berglund for her patience, support and guidance throughout the process. My advisor Karti Pulkkinen for your guidance, kind words and for always believing in me.

My friends Anna Kokki, Chin Chin Wong, Helen Marton, Sadie Trigueros and Manuel Arias Barrantes who supported my process.

Violeta Mezeklieva, Alice Engelheart and Sophie Langride without whom the content of this thesis would not have made sense.

Eva Maria Marquez Cano for always believing in me and supporting me and Diego Gilly for inspiring me to be the best version of myself.

Viljami Lehtonen for your love and support.

Glossary

Food deserts- This term is related to food security, or rather food insecurity and is used to refer to urban or suburban areas where the food availability is limited and it is either expensive or unhealthy. The neighborhoods where this occurs tend to be poorer areas where diseases related to unhealthy diets are common. This term is commonly used in American cities, such as Detroit, where big supermarket chains have monopolized food sales and availability (Winne, 2008).

Food sovereignty- Food sovereignty is a term used to refer to the rights of people to local healthy foods grown in sustainable and traditional ways, supporting the local economy and the local diversity as well as traditions (La Via Campesina, 2007).

Techno-fix- "when issues are targeted in isolation, not in a systemic way, and while seemingly solving a problem at a point in a system, only to transfer that problem to another point". (Ceschin & Gaziulusoy, 2016 p 134)

Chinampa- A chinampa is a structure built on top of a lake using organic matter, like a man-made island, that allows for agricultural use. These structures were used by the Aztecs to cultivate in the city of Tenochtitlan in the Texcoco lake.

Abbreviations

GhG- Greenhouse Gas

IPCC- Intergovernmental Panel on Climate Change

HMR- Helsinki Metropolitan Region

UA- Urban Agriculture

UF- Urban Farming

UFP- Urban Food Production

UG- Urban Gardening

UN- United Nations

Contents

1.

Introduction

The global food system is complex and it is affecting the environment as well as social and even economic well-being; moreover, it is unsustainable and it is putting socio environmental systems under pressure. The business of food production has traded nutrition, health and well-being of consumers over profit making and wealth gain for a few (Kaufman, 2010; Roberts, 2009). Furthermore, the food production system is linear and focused on a model of extraction and disposal, which destabilizes and pollutes the environment (Ellen MacArthur Foundation, 2019, p. 16). While it is known that the system is unsustainable and there are efforts to change it, they are of little effect. Scientists and academics point that local governments and technological developments are indeed capable of making the changes (Godfray et al., 2010; IPCC, 2019a), but when it comes to practice, changes (if any) are small and seem to not have expected impacts.

The global food system is part of what we can call the wicked problems. Horst Rittel and Melvin Webber (1973) define wicked problems as planning problems, where the problem is confusing, not well defined, there are many actors involved with conflicting or overlapping values and where the system is not well understood. Some argue that there is no time for testing solutions (Rittel & Webber, 1973). However, McCall and Burge (McCALL & Burge, 2016) differ by stating that solutions must be put into well-thought-out trials. Wicked problems are characterized by not having a linear or evident solution, but every attempt is valuable and needed. The same way, the global food system is a wicked problem that can only be transformed once the systemic challenge is understood and the actors involved at a local level collaborate to envision solutions.

Scholars researching on transition theory towards sustainability suggest that a paradigm shift is required for achieving systemic change (Ernst, de Graaf-Van Dinther, R. E., Peek, & Loorbach, 2016; Gaziulusoy & Brezet, 2015; Geels, 2011; Haberl, Fischer-Kowalski, Krausmann, Martinez-Alier, & Winiwarter, 2011; Shove & Walker, 2007; Smith, Stirling, & Berkhout, 2005). The understanding and approach to solving problems need shifting from a linear process to a systemic one. In other words, these wicked problems cannot be solved with the same linear thinking that created them it in the first place.

In this thesis, I look at how Urban Food Production (UFP) and the innovative production systems emerging in the Helsinki Metropolitan Region (HMR) and how these initiatives can re-shape the way food is produced and consumed. The term Urban Food Production is used in this thesis to define the production of foods grown inside and on the fringes of cities. These practices are studied for their potential to the city, first as attempts to reconnect citizens with the sometimes distant food system (Angotti, 2015; Davila & Dyball, 2015; Goldstein, Hauschild, Fernández, & Birkved, 2016; Lyons, 2014; Pothukuchi & Kaufman, 1999) but also as opportunities to reconstruct local food systems that support a transformation towards regenerative and sustainable ways of food production (Ellen MacArthur Foundation, 2019, p. 29).

1. Introduction

In Finland the attempt is to shift the current food production system, with an ambitious strategy, aiming to be the producer of the most sustainable food in the world, according to the Food strategy 2030 (MMM, 2016). Aditionally, the strategy aims at placing Finland as one of the main sustainable producers feeding the world. While there are several attempts to support rural farmers to adapt to more sustainable practices and implement circular economy solutions (Ruokavirasto, 2019; Sitra, n.d.), there is a lack of policy support in urban areas. In the capital metropolitan region, consisting of the cities of Helsinki, Espoo and Vantaa, the national strategy is not reflected. In fact, the strategy only targets rural regions, missing the interrelations between rural areas and urban areas which are expected to consume 80% of the food produced by 2050 (Ellen MacArthur Foundation, 2019, p. 9).

To analyze the local context, I use the Multi Level Perspective (MLP) framework. It is a framework proposed by Rip & Kemp (1998) and later on implemented by Geels (2002) as a model used to understand and analyze how socio-technological change happens (Geels, 2002, p. 1259). The framework proposes three conceptual "levels" that interact with and affect each other: (1) the micro level or Niche is a protected space, such as a niche market or R&D lab. The actors in the niche are startups, creators, researchers, scientists or entrepreneurs that create radical innovations that can, with the right conditions, gain traction and influence (2) the Regime, the meso level (Geels, 2011, p. 27). The regime represents the current socio-technical system, the long-learned practices of society at large. Whereas the regime has a steady trajectory of innovation, changes in this level are slow but feasible (p. 27). The regime receives pressure from (3) the Landscape or the macro level, which represents the global trends and external influences, composed of many different factors, such as economic growth, cultural values or environmental challenges (Geels, 2002, p. 1260).

In the case of the Helsinki Metropolitan Region (HMR), the landscape is all the external factors influencing the world, such as the pressures to act upon climate change, but also the global trends of consumption and the prevailing economic model. The regime is the local culture and world view, from the political sector, techno-scientific developments, culture, industry and how these aspects shape the local society. In this instance I study the niche of urban food production to understand how a group of producers is both working with the global pressures as well as attempting to create a positive change for a sustainable future.

With this thesis, I do a reflective ethnographic study of the Helsinki Metropolitan Region context as a wealthy democracy, and the Urban Food Production niche. The questions I seek to answer are: (1) What is the Urban Food Production niche "giving" or generating in the Helsinki Metropolitan Region to support a transition towards a more sustainable future of food production? And (2) How might the urban food production niche influence the planning and policy making of the HMR for sustainable transitions of food production and consumption?

I use my personal background, a Mexican designer living in Finland, as a critical lens through which I reflect on some of the topics I present. I use my background as an individual working on topics of climate change with

Mexican indigenous communities and how the culture and challenges are interpreted and understood differently. I bring this critical thinking and understanding from another culture as a form of ethnography where I understand and critically reflect on the local culture. I also place myself within the research as I myself am part of the Niche of study, being part of an experimental community garden in Aalto University that is part of a student led initiative to experiment with sustainability issues through practice: The Test-Site. These experiences have led my thinking and also made this study personal.

This reflective research also allows me to ponder on the design discipline and how I view myself as a designer in an era in which designers are developing new skills by shaping, questioning and sense making on the ways of modern life (Manzini, 2015). I like the concept of design as a form of activism where the status quo is challenged through a creative expression that creates a dialogue or proposes alternative visions of the world. Transition design can be a form of design activism, as it has a critical eye towards the mainstream, and it proposes a paradigm shift (Berglund, 2012; Irwin, 2015; Manzini, 2015). This work allows me to explore the barriers between design strategy and activism as I use systematic approaches to both design the research and present the information in a way that raises awareness and sparks a conversation around a topic that tends to be overlooked in the planning of the HMR. I tell the story of the niche actors, and their interactions with the regime actors that have to adapt in order to make a positive change for sustainability.

This thesis is structured as follows: in Chapter 2 I present the main problems regarding food production and the global system, and the relations to climate change and urbanization. In Chapter 3, I introduce the literature around urban transitions towards sustainability as well as the previous research around urban food production and the benefits this brings to the city. In Chapter 4, I focus on the Finnish context and the Helsinki Metropolitan Region with a critical perspective on the history as well as current actions to make the nation more sustainable, especially when it comes to food production. In Chapter 5 I introduce the methods that were used for gathering the data as well as analyzing and interpreting the findings. Chapter 6 presents the findings of the research and the answer to the 2 research questions. Lastly, Chapter 7 presents my conclusions and the learning outcomes of the presented research.

2.

Background: The landscape that influences the global food system

2.1. The complexity of the global food production system

The global food production system has allowed society to develop and grow at a fast pace, and it has given people opportunities for living better lives; nonetheless, there is growing evidence that shows the unsustainability of the current models of food production and consumption (Intergovernmental Panel on Climate Change [IPCC], 2019b). From the consumption patterns of populations to the land use management, the impacts on the environment from the food system are many. Policy makers, together with the local producers need to develop better systems and the use of technologies can support the change (IPCC, 2019b).

Unlike renewable energy solutions, there is no concise alternative solution that proves to be sustainable at a global scale for food production (Kemp, Loorbach, & Rotmans, 2007). Nonetheless, there is enough evidence to show that industrial agriculture is unsustainable. Moreover, it has contributed to desertification and degradation of land, which in turn have contributed to the acceleration of climate change. (IPCC, 2019a). During 2007-2016, agriculture forestry and other land use activities represented 23% of total anthropogenic greenhouse gas emissions. The Intergovernmental Panel on Climate Change report which was released in August 2019 underlines that the desirable outcomes of emission reductions will depend on the policies and governance strategies implemented to address appropriate solutions at a local level (IPCC, 2019a).

The industrial agriculture system has brought many problems and has played a significant role in the depletion of many of the world's resources. Deforestation, land degradation, water shortages and the changing climate due to carbon release from the hydrocarbon industry are some of the results of the unmeasured consumption of the food system (IPCC, 2019b).

> "The challenge of sustainability is, therefore, a fundamental re-orientation of society and the economy, not the implementation of some technical fixes" (Haberl, Fischer-Kowalski, Krausmann, Martinez-Alier, & Winiwarter, 2011, p.1)

2.2. Food production and climate change

With the climate changing around the world, the consequences are unpredictable and it is affecting the production, availability, access and quality of food (IPCC, 2019b). The IPCC report states that these are the four pillars of food security and it is uncertain to know how these will play out at local levels, mostly through declines in the availability of food, which then results in an increase of prices and disruption of the supply chain. Again, it is hard to know how the predictions of the report will materialize at a local level, which is why the authors of the IPCC report urge local governments to seek for local strategies which are tailored to the context.

Cities are pressed to adopt more carbon neutral strategies, as they are the primary contributors to climate change (De Zeeuw, 2011). They, on the other hand, are also the nucleus for possibilities and where adaptations to climate change can have the most impact. Cities can solve climate change challenges in a localized manner because of the dimensions and unique cultural characteristics (De Zeeuw, 2011). It is crucial to design policies for the sustainable management of resources while keeping carbon in the ground and feeding vulnerable populations (IPCC, 2019a)

2.3. Food production and Urbanization

The food production system of today and the growth and success of society and our cities are closely linked together. The industrialization of agriculture has allowed societies to expand and has been successful to alleviate hunger and encourage the well-being of nations. Nevertheless, the industrialization of agriculture, as described above, has generated many problems.

As Goldstein et al. (2016) write, the main approach to address urban sustainability is focusing on energy solutions, renewable resources, traffic solutions and efficiency in buildings. While these aspects are crucial for a sustainable development, "they disregard one of the largest environmental pressures of cities: urban food consumption" (Goldstein, Hauschild, Fernández, & Birkved, 2016, p. 2). They further mention the supply of food playing a big role in the emissions of greenhouse gases, biodiversity loss, pollution of water, land degradation and extraction of non-renewable resources, to mention a few. These examples emphasize the role of urban food consumption in achieving urban sustainability.

The global population is predicted to grow, and 68% of people are expected to be located in urban areas by 2050 (United Nations, 2019). This in part will mean that the proportion of people producing food will decrease and the populations of consumers of middle and upper income will grow. These changes in population bring changes in demand, which results in changes of land use in the agricultural sector, which in turn is at risk because of increasing land degradation (Satterthwaite, McGranahan, & Tacoli, 2010).

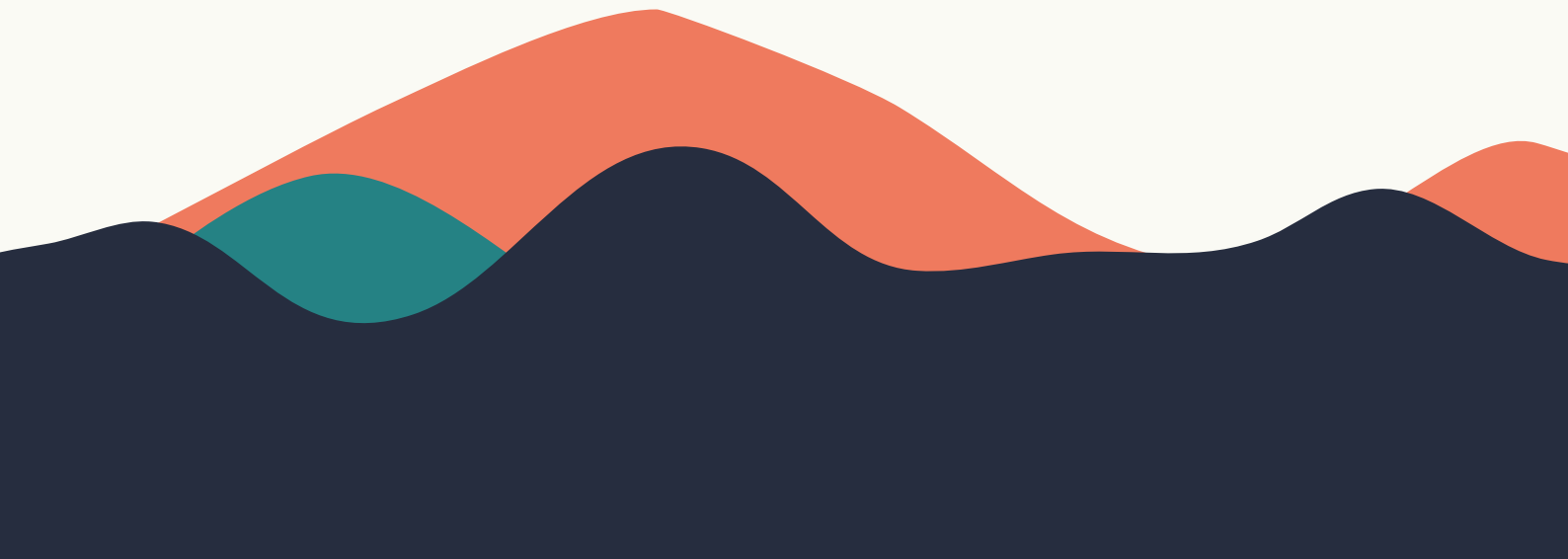
> "As Centers of population and economic activity, cities have a dominant influence on the scale and form of anthropogenic material and energy flows, consequently playing a central role in any shifts towards sustainability" (Goldstein et al., 2016, p.2)

Urbanization and the densification of cities is seen as a sustainable alternative, as it provides many benefits that improve the quality of life, while gathering citizens in smaller land areas (Satterthwaite et al. 2010). Urbanization in itself is not the problem, but rather the lack of planning for food production in the development of cities. Since the industrialization, city planning has neglected the provision of food to urban areas (Morgan, 2014).

On the other hand, Urban Agriculture and urban food production practices are a growing global trend. These practices create many possibilities for the cities, with local opportunities to the local contexts. Urban food production might not be profitable or compete with the agricultural industry, nonetheless, it can bring many positive interactions to city life, as previous research suggest (Block, Chávez, Allen, & Ramirez, 2012; Davila & Dyball, 2015; Moinel, 2017; Olivier & Heinecken, 2017; Pothukuchi & Kaufman, 1999; Viljoen & Bohn, 2014; Voicu & Been, 2008). To understand how cities can support transitions towards more sustainable food production and consumption I will explore the literature and concepts further in the next chapter.

3.

Urban transitions and urban food production



3.1. Urban Transitions Towards Sustainability

As mentioned above, cities are predicted to grow and with this a need of transitioning towards more sustainable lifestyles (De Zeeuw, 2011; Ellen MacArthur Foundation, 2019; Hodson & Marvin, 2010; McPhearson, Haase, Kabisch, & Gren, 2016). This means, as Hodson and Marvin (2010) suggest, that new "urban infrastructure transitions require new and effective forms of urban knowledge to be interactively produced, communicated and appropriated" (Hodson & Marvin, 2010, p. 477). In other words, the way cities are planned should be co-created actively by engaged actors to meet the needs of the changing urban regions.

As Ernst (2016) and his colleagues emphasize, urban sustainability can be considered a wicked problem as there are no straightforward solutions, the needs are constantly shifting, the opportunities for trial and error are limited and the implementation of trials can be costly (Ernst, de Graaf-Van Dinther, R. E., Peek, & Loorbach, 2016, p. 2988). They further argue that urban sustainability transitions are needed, as they are:

> *purposive, systemic, long-term and vision-led change towards sustainability in the incumbent complex of urban practices, technologies, infrastructures, markets and institutions that determine patterns of production and consumption of resources and require long-term oriented governance approaches and flexible, adaptive and reflexive policy designs that emphasize deliberation, probing, experimentation and learning. (p. 2988)*

That is to say that sustainable urban transitions can play a significant role in the work towards adapting to more sustainable ways of living that target the production and consumption patterns.

Governments have the potential to support transitions with the use of policy that nudges transitions. In fact, governments play key roles as enablers of transitions, nonetheless, they can also create barriers or slow down transitions (Rotmans, Kemp, & Van Asselt, 2001). Local governments, rather than national governments, are crucial as they create and support channels that trigger transitions. Local governments are closer to citizens and their responsibilities lay closer to the planning and logistics for social change. In addition, governments can be more involved in change-making by promoting change through experimentation and learning (p, 25).

While urban transformation is considered crucial for transitioning to more sustainable societies, the role of cities is still not clear either at an empirical, practical or conceptual level (Hodson & Marvin, 2010; Hodson & Marvin 2012). This means that the research developed so far does not give enough evidence to show the role of cities in transitions. This being said, cities are essential to transitions as they are the nucleus of social interactions and culture where both local governments and citizens can co-create and shape values for sustainable futures.

Still, the values and visions of those creating policies are crucial factors that can create biases in urban sustainable transitions, and which plays a fundamental role in defining the sustainability factors that concern the development of a city (Hodson & Marvin, 2012). In other words, transitions have to be planned, a vision or long term goal to be set in order to create a clear pathway; nonetheless, when the concept of sustainability is loosely defined, the visions can fall short for sustainable transitions (Shove & Walker, 2007, p. 766). This is a common problem in cities that follow neoliberal models of policy making and city making (Hodson & Marvin, 2012, p. 435).

Hansen and Conen (2015) remind us that it is essential to understand the context in which a transition is envisioned. The specific characteristics of a place define the elements that can drive transitions towards a desired pathway. Culture for example is essential to the characteristics of a place, and it is what defines the predominant practices or "spatial relations" to the specific context. For this reason, urban and regional policies are major steps in supporting transitions. The urban strategies can influence and support the national goals on the same way that National and multinational strategies influence regional visions, and the best way to take strategies further is with the involvement of local organizations that work as intermediaries (Hansen & Conen, 2015).

To summarize, the role of the city organizations as enablers of transitions is fundamental as cities offer opportunities as test beds for experimenting alternative ways of doing, especially smaller cities. Moreover, governments have to play active roles in the change by adapting experimental approaches that involve local actors as active makers of change. The local characteristics of the city define the pathways for transitions, and cities can create conditions that support the change, none the less the local strategies have to be in line with and support the regional and national targets to achieve sustainability.

In the Sustainability Science Days at Aalto University, the guest speaker, Derk Loorbach (Thursday May 9 2019) mentioned that a paradigm shift is essential to the transformation of society. To do so, when thinking about sustainability solutions we must ask ourselves, are we supporting the optimization of unsustainable ways of production and consumption or are we asking questions to find alternative ways of doing things? Loorbach gave an example on research on plastic wrapping for vegetable supermarkets over biodegradable plastics. He pointed out that the question is not whether or not plastic should be used, but rather why is plastic used in the first place and what are the factors that have forced us to use plastic? This led me to question, why is the logistics of food left out of the planning of cities and why is it left to corporations to take care of these issues? Why is it so that even if we know that populations will grow in cities, the planning of their subsistence is left out? What if inputs and outputs could be incorporated back into the system and support a regenerative system, wouldn't this bring a transformation in the status quo of city living and pollution? I believe urban food production can support a transition in food production and in food consumption in the city. In the next section I analyze further what researchers suggest that UFP can bring to a city.

3.2. The Role of Urban Food Production in Shaping a City

In this section I look into what is the potential of Urban Food Production for a city, not as a primary source of food, but as part of a strategy to address and support urban transitions to sustainable lifestyles. As Katrin Bohn and André Viljoen eloquently suggest: "It is neither possible nor desirable to feed a city solely through urban agriculture, but coordinated and well-managed interrelationships between urban, rural and international agriculture can lead to an environmentally optimal and equitable urban food system" (Bohn & Viljoen, 2014a, p. 7) As it was mentioned previously, there is no one solution to a wicked problem, nonetheless, evidence suggests that planning for the integration of Urban Agriculture can incentivize sustainable behaviors and practices from awareness consumption to sharing economy or the integration of communities in urban areas (Angotti, Tom, 2015; Davila & Dyball, 2015; Psarikidou, 2015).

3.2.1. Urban Food Production

I use the term Urban Food Production (UFP) to talk about the practices of growing foods that are produced in the city as well as the fringes of the city. Many other terminologies are used interchangeably to refer to the same practices, such as: Urban Gardening (UG), Urban Agriculture (UA), and Urban Farming (UF).

In next sections I introduce first definitions and understandings of urban food production. Second, I explore some of the benefits of UFP identified by different academics and how these have been used to revitalize cities, create social cohesion, be empowered by the food sovereignty movement or address food scarcity in urban food deserts (Angotti, T., 2015; Block, Chávez, Allen, & Ramirez, 2012; Bohn & Viljoen, 2014; Davila & Dyball, 2015; Mougeot, 1994; Olivier & Heinecken, 2017; Pothukuchi & Kaufman, 1999).

What is it: defining Urban Food Production

Urban Agriculture is not a new practice, as researcher Luc J.A Mougeot (1994) from the International Development Research Center writes; "Urban agriculture (UA), also called urban food production or urban farming, can be defined as the growing of food and nonfood plant and tree crops and the raising of livestock (cattle, fowl, fish, and so forth), both within (intra-) and on the fringe of (peri-) urban areas" (Mougeot, 1994, p. 1). While this was written 25 years ago, the practices of growing foods within and on the fringes of urban areas remains the same.

Examples of Urban Agriculture have occurred parallel to the development of our cities since ancient times (Mougeot, 1994; Bell 2016). In Europe, traces of allotment gardens can be found in Mesopotamian cities, as well as Egyptian and Roman centers. In Latin America we also find examples of UA in the Aztec metropolis of Tenochtitlan with the chinampas, a structure that not only provided food, but it is still today a good example of a self-sufficient system (Mougeot 1994). These forms of agriculture were designed to feed the city, attempting to achieve self-sufficiency. The examples relevant to the research, because food planning was incorporated into the urban web and

were fundamental for the subsistence of its inhabitants, especially through times of conflict.

The mentioned examples of Urban Farming oppose the urban structures of most modern cities, where the food consumed within cities is brought from afar and the food system is not incorporated into city planning. Professor Jerome Kaufman, together with other American scholars have addressed issues on the lack of planning for food access in the urban web, especially in the United States and Europe. Pothukuchi and Kaufman (1999) argue that there are four main reasons why food systems are neglected in city planning. First, **food in cities is taken for granted**. Second, historical developments of major cities have influenced the perception of urban problems as opposed to rural problems, **creating a rural-urban divide**. The third reason has to do with industrialization and how **technologies brought food production further away from the city** and the minds of city dwellers. Lastly, they argue that an important factor is **the conflicting views between rural and urban policy** (Pothukuchi & Kaufman, 1999, p. 214). They further argue that cities can address these factors by creating a department or council that directly works with food in the city. In the last section of this Chapter, I present two examples of cities who have implemented a local strategy with positive results.

I mention the observations of professor Jerome Kaufman, since in this thesis I argue that there is a lack of planning of food as a service in cities, which is usually left to companies and I believe this is part of the reason why the global food system is so unsustainable. Today the market of food production and consumption is focused on economic growth rather on the nutrition and supply of the world population (Kaufman, 2010). I believe this is incredibly problematic for the sustainability of the system, and for creating alternatives where producers have goals of sustainable food production rather than wealth is essential. In this thesis I hypothesize that local governments together with the local producers have a potential to influence a transition if they co-create the system together.

What does Urban Food Production create in a city?

Bohn and Viljoen are urban planners, scholars and researchers that advocate for the design of productive cities, or as they refer to their work Continuous Productive Urban Landscapes (CPLU). CPLU is a design concept in which the production of food is integrated into the urban grid (Bohn & Viljoen, 2014b). As part of their work they have created the urban food system star (Figure 1) to show the aspects of society that can be impacted by urban food production and to illustrate how many of the aspects integrate or touch upon urban life. I have modified the original to integrate the aspects I will touch upon in this section. The star illustrates why the planning and design of productive cities is relevant, but also it shows that the system as is needs to transition to allow for more holistic ways of planning in which matters related to food, an essential human need, must be integrated to urban living. (Bohn & Viljoen, 2014b).

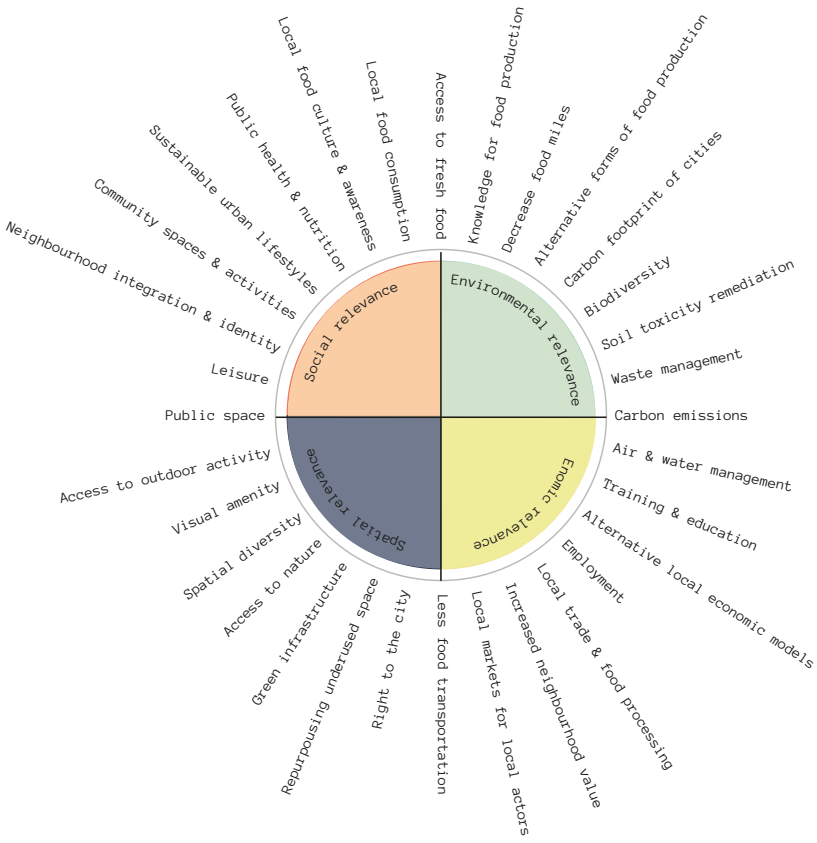


Figure 1. Adaptation of the the urban food system star. Adapted from the book "*Second Nature, Designing productive Cities*" edited by Andre Viljoen and Katrin Bohn, 2014, (p. 9). Copyright 2014 by Routledge. Adapted with permission

While Bohn and Viljoen argue UA support a decline in the ecological footprint of cities, the sustainability of UA as an alternative to conventional forms of agriculture is debated. Goldstein et al. (2016) research shows that local assessments are essential to define what forms or agriculture are better suited for the specific context, nonetheless they do acknowledge forms of agriculture in buildings and around cities can present alternatives for sustainable production, not to mention a reduction in transportation costs and emissions (Goldstein et al., 2016). Other studies suggest that in general more conventional forms of UA in cities around the world are in fact promoting sustainability, from the reduction of overall emissions to increased efficiency in urban carbon sequestration; Donella Meadows (2000) suggested an urban garden of 1.618 square meters is capable of offsetting around three years of an average American's emissions, which is 19 tons of carbon.

More traditional ways of farming have the potential of building biomass and increasing the quality of the soil (Angotti 2015). Viljoen and Bhon (2014) propose a model as part of the CPLU concept they designed. If cities used the food waste of citizens, and other organic waste such as sludge and organic matter, the treated compost can then be used to cover up nutrient depleted soil for a closed loop system in urban food production (Viljoen & Bohn, 2014, p. 32).

Further, when it comes to the social relevance, a survey from Cambridge showed that people who started growing foods in allotment gardens improved their diets significantly by including more varieties of vegetables and fruits to their diets, thus eating more similarly to the recommended healthy diets.(Viljoen & Bohn, 2014, p.43) The survey further showed that the allotment gardeners increase and exceed the recommended 30 minute exercise per day recommendation. The findings demonstrate the correlation

of urban gardens with healthier lifestyles, and that behavior changes can be achieved through the promotion of gardening practices. Viljoen and Bhon also make an interesting point regarding the allotment tenants reducing their carbon footprints at an estimate of 950kg per year thanks to a reduction in consumption of store-bought vegetables (p.43).

Davila and Dyball (2015) propose that growing food in cities brings an educational potential to transform behavior of citizens and raise awareness in regards to the food system (Davila & Dyball, 2015). They study the Australian context and use the food sovereignty definition as inspiration, for its potential to empower individuals to take more conscious actions in regards to the food consumption and the rights of people to healthier and fair diets. They make a case for UA as a driver for individuals to become more critical of the relationships they have with the food system, thus making more critical decisions.

Similarly, Heather Okvat and Alex Zatura (2011) suggest, neighborhoods with high crime rates, high noise levels or empty common spaces relate to low social cohesion. Community gardens have the potential to create bridges in communities and as a result creating a sense of ownership, and promoting social integration. But not only this, Okvat and Zatura then make a case that gardening in the city can in fact create social bridges as well as social environmental bridges, they call it an Earth community (Okvat & Zautra, 2011, p. 375). This means that through food production practices, individuals become more aware of the natural environment as well as the impacts their actions have on the environment.

Lastly, when it comes to economic relevance, there are several factors that are interesting for city planners, the market and the wellbeing of the populations. A study conducted in New York City by Ioan Voicu and Vicki Been showed property values of houses in close proximity to a community garden increased by 9.4% within 5 years of the creation of the garden (Voicu & Been, 2008, p.277). Moreover, Kathrin Specht et al. (2014) suggest that bringing food production into the city can complement the supply of food to cities and can be a great opportunity for job creation in several sectors, from the production of the food to distribution and selling within the city. In addition, in Manchester, forms of communal food growing initiatives have emerged around the city to enhance the cohesion of communities that are otherwise isolated, creating *moral economies* where the aim is to share and create a community around food rather than selling or purchasing of goods with little to no social interactions (Psarikidou, 2015).

All in all, urban food production is considered of social relevance for the city, however the above-mentioned studies suggest planning for the city is of political relevance. Kevin Morgan (2014) makes a case for why planning the Foodscape is a political problem. He argues that the food system is interlinked with many of the realms of public policy as food production, distribution, consumption, and waste account for 31% of emissions in Europe. Moreover, food security is a matter of social justice and national security as prices of food get higher, but not only this, it is a matter of public health as there is an epidemic of diet-related diseases. On top of it there is growing evidence that the adaptation of more sustainable and regenerative management of

resources are essential to reach targets of sustainable development and climate change mitigation (Morgan, 2014, p. 18-19). Supporting the emergence and development of food production in the city can be a strategy that enhances more sustainable social, environmental and economic interactions for urban transitions. Next I present two examples of cities who have adopted strategies around the production and consumption of food in the city with positive impacts.

Benchmarks

Toronto Food Policy Council

The Toronto Food Policy Council was built in 1991 with the mission to serve as an advisor to the City of Toronto on issues related to food policy. The council "connects diverse people from the food, farming and community sector to develop innovative policies and projects that support a health-focused food system, and provides a forum for action across the food system" (Toronto Food Policy Council, n.d. para.1). This council supports the city by identifying potential food related challenges, developing and identifying innovative solutions and assisting on the development of food policies.

While the council was initially set to answer to the Board of Health, the initiative has contributed to different municipal policies and planning, from urban and community gardening to environmental planning or even nutrition and hunger management, serving as a connector between different policy sectors (Morgan 2014). As Morgan clarifies, the success of the policy council has to do with the collaboration of "top-down" municipal institutions and the "bottom-up" action of civil society. The burden has been shared and supported by different actors, multiplying the overall impact of the council and having positive outcomes from food related disease prevention to environmental planning (Morgan, 2014, p. 19).

Gent en Garde, the strategy developed by the city of Ghent

In 2013, the City of Ghent embarked on a strategy, inspired by Toronto and Bristol, to develop its own food council (City of Ghent, 2017). The city is part of a network called Food Smart Cities for Development, aiming at supporting sustainable food production at a city scale. The council is formed by members of the private and public sector such as the agriculture department, research institutions, civil associations and businesses. Their goal is to act as a board overlooking the city's food policies and acting upon them, thus promoting a vision of the city's sustainable food strategy (Goossens, 2016).

The council sees urban agriculture as a link between local farmers and citizens by creating knowledge, awareness and partnerships. The city has five clear goals for the sustainable food strategy that focus on different aspects and departments of society, from the support of producers to promotion of local food and even creating alternative channels for producers to sell their products. But not only this, the city has made an effort to change the land use policy to make land available for farming and Urban Gardening as well as changing regulations so that producers can sell directly to citizens. The city also tries to support innovations in the food sector and initiatives that promote circular economy. Altogether, the city has created a strategy that focuses on the specific needs of producers, but also taking into consideration

innovations and global trends for a systemic sustainable transition in the food sector (Goossens, 2016). In the next section I will present the case of Helsinki, analyzing both the culture and the local context as well as the attempts to make the city more sustainable and support sustainable lifestyles.

Both examples mentioned above show how cities can in fact support and co-create alternatives to the global food system. Other examples of cities with effective examples of integration of UFP to the policy and planning of the city are Bristol, Manchester and Milano. Nonetheless, every city has a specific cultural context, which means that not all models can be replicated equally in every city, as the specific characteristics play a role on how these initiatives unfold. If a strategy in implemented in Helsinki it must be relevant to the context and the specific cultural traits. Next, I will take a closer look at the context of Finland and the Helsinki Metropolitan Region to understand the culture better.

4.

The Context

4.1. The Helsinki Metropolitan Region and the Finnish Nation

Helsinki is a very interesting example of city making. It is a city that adopts designerly ways of planning and is shaped by and evolves with the participation of inhabitants. It allows citizens to organize and think of alternatives and activist groups are heard and considered by the city planning (Berglund, 2013). Yet Helsinki poses a very interesting paradox in which regulation and the use of planning makes it harder for citizens to interact and shape the city.

In Helsinki the vision for a more sustainable lifestyle is being experimented in neighborhoods (Helsinki City, 2018a; Sitra, n.d) and the concept of Smart City appears to be a key element for the sustainable development of the city. A big amount of effort is directed towards reducing energy consumption and on having the most efficient and state of the art innovative means of transportation. But when it comes to the planning of a more sustainable food supply, the efforts are not evident. Looking at the indexes on carbon emissions by different industries, where agriculture only represents 3% of total global emissions, there seems to be no need for concern, nevertheless, as the most recent IPCC report clearly shows (see Chapter 2), the evidence is frightening on how much the agricultural industry is damaging the land and influencing the changing climate. This is a challenge that has to be addressed locally and the involvement of cities to engage in the food system is necessary.

4.1.1. A Brief History of Finland and the Urban Food Production

Bellow I look deeper at the history of Finland, and how the chronological factors influenced the development of Helsinki and the metropolitan region. The goal of this section is to understand the local context better as well as how the global challenges are shaping the local context. This chapter is part of a literature review that allowed me to familiarize myself with the history and culture of Finland. I use a critical approach based my own experience as an alien to the Finnish culture, allowing me to reflect on the context. I look into some historical events since I consider that to plan the future it is crucial to understand the past. I realized that understanding the relationships of Finland to its agricultural background was linked to understanding the local barriers to a sustainable local food system.

Figure 2. I created a timeline of what I consider to be important historical factors in both Finland and Europe, to further understand what I consider to be groundbreaking moments that have led to perceptions and identities of the Finnish society in parallel to the local food system, the urban agriculture tradition, and the perceptions of a modern society. The information of this Chapter is limited to the available texts translated or written in English.

Based on Simon Bell et al. (2016) book chapter 1 A History of Urban Gardens in Europe (p. 8–32), extracted from the book *Urban Allotment Gardens in Europe* as well as Eeva Berglund's (2007) article *Information Society Finnish-style, or an anthropological view of the Modern* (p. 75–91).

EUROPE

1700–1910
Industrialization

Growth in population

Expansion of the main urban industrial towns

Lack of urban greenery and nature

No concept of wellbeing for urban dwellers

Bad living conditions for rural and urban poor

FINLAND

1800´s
The majority of the population in Espoo made a living off of agriculture

1812
Helsinki became the capital of Finland

1911–1950
World Wars & Depression

World War I (1914–1918)
Political & economic instability
The great depression
Social inequality and division

World War II (1934–1945)
Split of west and east
Homelessness and increase of poor population
Lack of food availability due to war and economy

Farmers Left their lands to join the army, leaving urban areas with less food availability

"Victory Gardens" appeared as a responce to food shortages

1951...
Post War & Beyond

Farmers came back from wars and to lands

Labour structures & economy made food cheaper and accessible

Urban Gardening went from duty to hobby

Change of land use with reconstruction of cities increased urban density and brought food production further

Convenience food became a symbol of freedom and modernity

From forest nation to information nation

Finland is a young country as opposed to most of the other European countries, and the local history is very different to most of the nations within the European Union (EU). Its geographical location and the specific challenges overcome by the country have played a crucial role in what Finland is today. I wanted to understand these differences to clarify what makes Finland particular, where general practices of today come from and how the particular local context can be enhanced for a sustainable transition.

Finland proclaimed its independence in 1917, after years of conflict and invasion from Russia and Sweden. Prior to the independence, Finland had already a well-established forest industry and was known for its timber. The independence launched a civil war ending in May 1918 when the government was proclaimed victorious (City of Helsinki, 2017). In the aftermath of the independence, Finland was left at a disadvantage and the country was in poverty even though the country was self-sufficient to an extent due to the thriving forest industry. (Berglund, 2007, p. 80).

In this period, as in many other European countries, industrialization meant that the citizens had to emigrate to the cities in search of work (Bell et al., 2016). But cities were not planned and the densification of cities meant that services were not always available, food being one of them. In 1919 the first urban garden was founded in Helsinki, providing access to food for the citizens (Bell et al., 2016, p. 13).

Image 1. Community gardens of 1920´s in Helsinki. From "Helsinki City Museum" by unknown author, 1920. Reprinted with permission.

Political neutrality and the need to safeguard the economy were a common understanding of society in the aftermath of the independence (Berglund, 2007, p. 80). As a result, the state looked for possibilities to preserve those feelings and sought to safeguard the economy around the resource that was most abundant in the country: the forest (p.80). In the 20th century, the government forged the identity of a forest state with the development of the timber industry as well as advancing the existing forest knowledge through the sciences: biochemistry, engineering and forest conservation. This resulted in industries such as pulp and paper that used the forest resources,created local businesses and helped the economy grow (Berglund, 2008).

From 1939 to 1940 the Soviet Union invaded Finland, which led to the winter war (City of Helsinki, 2017, para. 15). Immediately after, the second World War shook Europe, but Finland was relatively unharmed by this war. After both wars, in the 1950's the national economy was weak and many citizens emigrated to the capital and abroad.

As for Helsinki, the City only became the capital of Finland in 1812 (City of Helsinki, 2017, para. 7). Prior to this, Helsinki was a town founded by King Gustavus Vasa of Sweden. The center of the town was located further north, where Viikki is located today. According to an interviewee, during this period Espoo and Vantaa were in its majority agricultural lands and most of its residents were making a living off of agriculture (K. Mikkelä, personal communication, July 1, 2019).

Modern Helsinki

As a response to the collapse of the 1950's, a policy driven modernization of society begun. Great things came out of this modernization (such as Nokia) and the identity shifted from forest society to information society (Berglund, 2007). As a result, government led initiatives to fund and support science and knowledge creation such as Sitra, the Finnish National Fund for Research and Development emerged and thus a focus on science and technology developments were sought over the environmental and agricultural values that came with being a forest nation.

The identity of Finns, as described by Eeva Berglund (2007) is to be *modernity driven and cutting edge* (p. 76). This is something I have reflected upon throughout this process and I argue it is key in understanding Finnish culture as a foreign to this country. As opposed to my own context, it appears that in Finland sustainability and sustainable well-being is a goal to be achieved by robotization and automation (Linturi, 2015; Ministry of Economic Affairs and Employment, 2017). While it is true that technology can support city life to become more sustainable, I am critical to think that this could reinforce the already existing disconnect of nature values and the understanding of the *natural world*. Finland as a nation is forward thinking and inspiration comes from ideas of a future, while in Mexico a big part of our culture is to preserve and cherish tradition and traditional knowledge. Urban-rural divide increases, and this is a global problem that is affecting every country with development and modernization, and it is only expected to increase (Angotti, T., 2015; Berglund, 2007).

In Finland, as in many other nations around the world, modernization had to do with the wellbeing of society. From the 1960's to the 1990's the government led strategies to develop scientific knowledge and technologies, this was part of a strategy to create a change in the perception of society as one focused on facts and information. In 1995, Finland joined the European Union, and with this a new identity was widely embraced of Finland as an information society (Berglund, 2007, p80). This went hand in hand with the idea of becoming modern, thus living in the city, not working in the fields and having a profession in line with the modern. Farming and living in Rural areas was –and is– contradictory to the vision of modernity, therefore, a perception of farming for the less scientifically educated came to be (Berglund, 2007 p. 82).

When it comes to the Helsinki Metropolitan Region (HMR), Helsinki is a modernity driven city aiming to become a hub for innovation (City of Helsinki 2018c). On the other hand, when it comes to food production and planning it is unclear whether any work is carried through or if there is space for such practices today other than the allotment gardens. As for Espoo and Vantaa the cities still have agricultural land, however the prices of land, and the change in land use are forcing farmers to move and sell those lands to developers as the practice is no longer profitable (K. Mikkelä, personal communication, July 1, 2019).

4.1.2. Local and national strategies: how is sustainable food production addressed?

Here I want to focus on the local context and how the global challenges of food production are (or are not) being addressed. I use my personal experiences as a foreigner to Finland and my previous experience to have a critical view.

National efforts to influence the Food system

Food Policy Committee

The Finnish Ministry of Agriculture and Forestry established a Food Policy Committee in 2016, whose role is to develop, coordinate and implement a food related policy within government (MMM, 2015a). The committee has worked in accordance with the European Union common agricultural policy which "aims to develop agricultural production in the Community in a balanced way, taking into account environmental well-being and animal welfare and promoting the viability of rural areas" (MMM, 2015b). The goal of this committee is to take action and implement the Finnish national food policy.

The national food policy aims to redevelop the agricultural sector by 2030 according to the following vision:

> *The best food in the world – In 2030, Finnish consumers eat tasty, healthy and safe Finnish food that has been produced sustainably and ethically. Consumers have the ability and possibility to make informed choices.*
> *A transparent, highly skilled, flexible, internationally competitive and profitable food system that responds to demand. The growth and advancement of the sector are supported by well-coordinated, high-level research, development, innovation and teaching. There is a high level of marketing and communication skills in the sector. Finland is a significant exporter of high quality and safe foodstuffs and food sector skills. (MMM, 2016)*

This vision is part of a report created by 100 experts and commented on by the ministries. The report creates an outline of the objectives of the policy to be implemented for 2030 (MMM, 2016).

The national policy focuses on seven objectives:

1. support local economy through regional procurement to enhance the agricultural sector
2. create efficient and diverse routes from farm to table
3. devise opportunities for the actors within the food system to receive training, as well as promoting support channels for research and innovation

4. shape a cohesive food culture and enhance the local appreciation of food as well as the regional identities
5. pursue the realization that food has a direct impact on health and the promotion of healthier lifestyles through healthier diets
6. promote national food security
7. enhance competitiveness of the Finnish food for the global market.

Even though most of the inhabitants consuming food live in cities, throughout the report it is clear that the relationship of food and city is ignored, and more efforts are geared towards rural areas as individual isolated areas. What is regularly mentioned is that Finland is at a disadvantage with the "competitor European countries" and possibilities in the EU procurement discussions (MMM, 2016, p. 10). However, I perceive a missing link where the cultural strengths of the city as *knowledge generating forward thinkers* and the *rural disadvantaged food producing areas* could support and benefit each other to bring forward the vision of Finnish food as the most sustainable in the world.

Moreover, the importance of the involvement of all actors of government is underlined in the strategy. However, when it comes to the HMR, the aims of the policy are lost. In Helsinki there is no local strategy, plan or committee that focuses on food and the only efforts are targeted at encouraging citizens to adopt more vegan and vegetarian diets (City of Helsinki, 2018b).

Finnish Food Authority

In January 2019, the Finnish Food Authority was created by merging the "Food Safety Authority Evira, the Mavi Rural Affairs as well as part of the National Land Survey of IT service centers "(Ruokavirasto, 2019). This authority also operates under the Ministry of Agriculture and Forestry. It is not clear whether the Committee is a predecessor to the Finnish Food Authority or if they work simultaneously. The vision for the Finnish Food Authority is to "work for the humans, animals and plants, monitor use of fertilizers, act as the EU procurement for agricultural sector and monitor that the EU strategies for the agriculture sector are followed'" (Ruokavirasto, 2019).

I contacted members of the authority to ask whether they consider urban and peri-urban food production in their work and the response was the Authority only works with rural areas of Finland. To date, it seems that there is no governmental agency that even considers the relationship between food and urban areas, other than for market or health regulations.

Sitra Regional Food Strategy

The Finnish National Fund for Research and Development (Sitra) is promoting a regional sustainable food network that implements circular economy projects into the farmers' processes. The goal of Sitra is in line with the food strategy 2030, to push forward the idea that Finland is to become the country with the most sustainable food system. The vision for this regional food system is to share and support the good practices of the participating farmers (Sitra, n.d.).

The regional networks consist of farmers of the regions of: Lapland, Central

Finland, the Åland Islands, the Saimaa Lake District and Uusimaa (Sitra, n.d.). However, when I approached the project contacts regarding how the HMR is integrated into the Uusimaa region strategy, the answer was similar to that of the Authority; urban production aspects are not considered in the project.

Urban production might seem insignificant when it comes to designing a sustainable food production system, especially if farmers belong to rural areas (and if these areas want to be preserved as productive). Nonetheless, the benefits of integrating forms of food production in urban and peri-urban regions should not be ignored.

The local context: Helsinki City strategy and the carbon neutral action plan

Helsinki City strategy 2017-2021

The Helsinki City strategy 2017-2021 envisions Helsinki as a "Functional City" (City of Helsinki, 2018c). However, the basis of this functionality remains unclear. No reference is given to the reasoning behind this definition of functionality or the aspects they choose to focus on.

The strategy 2017-2021 focuses on four areas of development to reach the vision of becoming the most functional city in the world. First, the city aims to create a good life for all its inhabitants regardless of age, disability, income or nationality. Second, the sustainable growth of the social, economic and environmental aspects of the city is essential for the development. Third, a responsible management of the finances is a key for the prosperity of Helsinki. Fourth, the city aims to provide a diversity of services for the interests of all inhabitants. To make sure that the strategy is successfully developed, the city creates a few "sub-strategies" focusing on real estate, youth development, health reinforcement, mobility and the land plan (City of Helsinki, 2018c).

In the document it is mentioned that the quality of the city services is fundamental for inhabitants to enjoy the place, that creating equality is essential for a feeling of safety and that functionality is a good strategy, even for business development. A big focus is placed on minorities, disabled communities and the growing elderly population, whose quality of life should be considered and integrated into the planning of the city.

One of the paragraphs that draws my attention reads "Helsinki's objective is to be one of Europe's most captivating locations for innovative start-ups and the most attractive knowledge hub for companies and individuals wanting to make the world a better place to live in" (City of Helsinki, 2018c p. 3). It further reads that it is a great test bed for innovations because of its size, its creative economy and the emerging sharing economy initiatives, making the city more diverse and inclusive. While I do not doubt Helsinki is a great place for innovators, I think it is important to define the industries, as there is a tendency to look for high tech future driven solutions. When it comes to food production, the cutting-edge solutions can offer potential for sustainable development, as previously mentioned in Chapter 3.2. However, on the basis of my being in contact with the network of urban food producer initiatives, it seems as if the existing innovations are not having great breakthroughs in the industry, even though they do attempt to make the *world a better place to live in*. What I mean by this is that the city supports innovation through several

channels, but it is unclear who has the right to be supported and even if there are initiatives that aim at improving the system, they do not necessarily receive the support that they deserve.

The strategy fails to address topics of sustainable living as well as those of food production and consumption and the efforts are geared towards the wellbeing of citizens as well as efficient systems. Not that it is expected, but as described in the previous chapter, it seems that adapting more forms of Urban Agriculture, a few of the targets could be met, while also envisioning more sustainable ways of living.

Carbon Neutral Helsinki- action plan

The city of Helsinki is making great efforts towards circular economy solutions and it is incentivized by the target to reduce carbon emissions. The efforts are in line with the Carbon Neutral Helsinki 2035 Action Plan and analyzed and carried forward by Sitra. The end goal of the city with the plan is to create a more fair and sustainable future.

The Carbon Neutral Action Plan (City of Helsinki, 2018b) only addresses food production and consumption when it comes to food waste as well as the consumption of plant-based diets and reduction of meat products. These efforts are well aligned with the reduction of the local consumption and the local carbon footprint. However, as further clarified in the plan, aspects of production of food consumed in the city, such as the transportation, the production itself or the packaging are not taken into consideration when considering the carbon neutrality; these are the areas with most emissions. When considering carbon neutrality, reducing food waste and the consumption of meat might seem more impactful. Nonetheless, with a systematic analysis it becomes clear that the food industry is partly to blame for the land degradation and deforestation (IPCC, 2019a).

The role of the city is not to act as the judge or measurer of how sustainable production is implemented in the world. However, the city can have a role and an impact by creating stricter regulations that give priority to sustainable ways of production both nationally and internationally. It is extremely complicated to track food chains and have transparent producers but governments can regulate this and demand for transparency in the food chain and food production practices.

To conclude, I want to point out that, while there is development in the food production sector in Finland, urban and peri-urban food production are not considered and I believe a big opportunity is missed that can support a national transition towards sustainability. I would argue that a big part of the problem in which we are today has to do with the perception that rural and urban are two separate things when in fact they are a part of the same system. A paradigm shift must happen for transitions towards sustainability and this begins by studying the system from a different perspective. Finland is forward driven and solutions to the challenges of the food sector are being envisioned, but the rural/urban divide can make the cities and the nation miss the opportunity to bring them together to reach the 2030 vision of a low carbon and sustainable food future. In the next Chapter, I present the methodology used for this thesis to understand how the HMR can play a role in the implementation of the national food strategy.

5.

Methodology

The empirical aim of this thesis is to create an understanding of what are the values urban food production generates in a city and how it can be applicable to local contexts for sustainable transitions in food production. In this thesis I study the local context of the Helsinki Metropolitan Region, the capital region of a rich democracy identified as a modernized information-society, open to experimentation and innovation and envisioned as one of the forerunners in sustainable development. The context gives me a case study of how a global challenge is currently unfolding at a local level, and through the research I try to envision potential pathways for a sustainable food system.

5.1. Research Questions

1. **What is the Urban Food Production niche *"giving"* or generating in the Helsinki Metropolitan Region to support a transition towards a more sustainable future of food production?**

2. **How might the urban food production niche influence the planning and policy making of the HMR for sustainable transitions of food production and consumption?**

5.2. Objectives

Theoretically

Understand the theory around transitions and how design can contribute to the conversation on urban transitions.

Understand the issues surrounding the current local food production niche in Helsinki to get a picture of:

1. Who are the niche actors doing urban agriculture/food production?
2. Understand the historical background of the local context as well as the current situation and identify the historical factors that might influence the current regime

As a design practitioner

1. What are the theories that support my role as a designer and/or facilitator?
2. How can I use my design skills to tell the story of the Helsinki Metropolitan Region?
3. What is my personal perception as a Mexican living in Finland, and how can I use this to shed light into alternative possibilities?

5.3. Structure

As part of my objectives, I want to understand how the design discipline uses theories and frameworks of social sciences as part of the design process. The design discipline is broad and very often designers cannot come up with a consistent definition of what design is. With this thesis I am to explore what design is to me as a versatile multidisciplinary practice that gets inspired and takes from other disciplines to create a common ground.

For this thesis, an explorative research approach was chosen to understand the challenges surrounding the Urban Food Production practice in the context of Helsinki metropolitan area. For the exploration, I adopted a methodology inspired by the double diamond process (Design Council, 2015) and applied research (Muratovski, 2016 p.193). This is an iterative process where the designer reflects on their own process throughout the research (Schön, 1983). I chose this as I was interested in understanding the challenges around urban food production in Helsinki, but also to reflect on my own role as a designer involved with urban food production initiatives.

I divide the process into 3 sections (Figure 5), the first is Exploration of the context and the topic, second Understanding the local context and third Materializing information. The double diamond process is generally used by designers to create deliverables or design interventions; however, the goal of this thesis is not to have a design intervention, but rather to create an understanding of a context, trigger conversations and challenge ideas of what future steps can be taken for sustainable food systems.

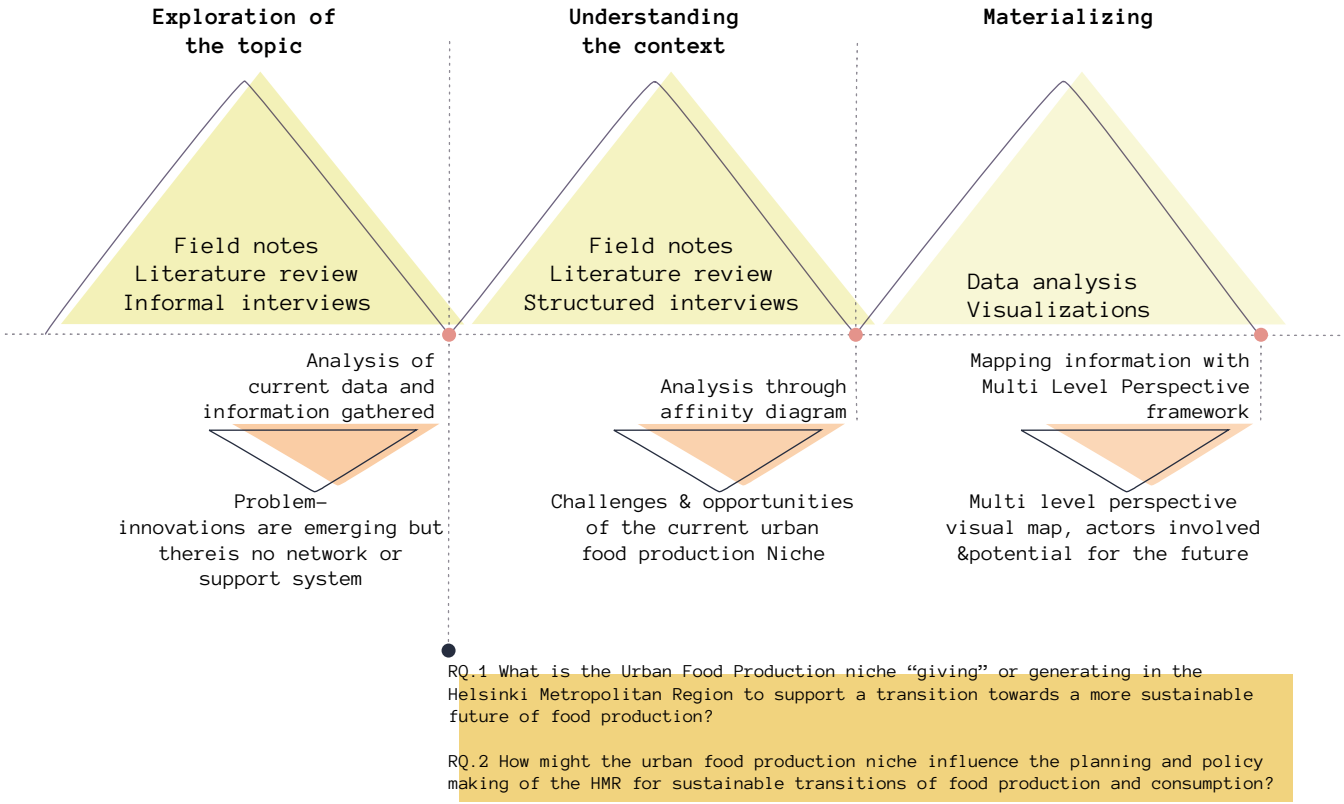


Figure 3. The process, inspired by the double diamond model and action research process

5.3.1. Exploration of the topic

The initial interest for this thesis was to understand 'what is going on in Helsinki in terms of Urban Food Production'. My initial exploratory questions were: "***What is going on in Helsinki in terms of urban gardening and urban agriculture? How is Helsinki different from other cities where there are many forms of food production? Is there a network of producers and if so, what are they aiming for? What is missing?***" To answer the questions, I conducted qualitative research approaches to support the understanding of the current situation.

To address the initial questions and objectives, I conducted a literature review to learn more about (a) the local context: history of Helsinki, as well as modern Helsinki and (b) theory and research around urban food production globally. Literature reviews are conducted to understand the essence behind specific research topics and inform the current research (Martin & Hanington, 2012, p. 112).

I had limitations understanding the local context because of the language barrier which I attempted to overcome by conducting informal interviews with experts. The information gathered on the History of the region as well as ideas of a modern Helsinki are limited to the knowledge I gathered from those interviews and the available information.

Observation and ethnographic research

Simultaneously I conducted ethnographic approaches to understand the current context. I got involved with groups that address urban gardening in the city such as Dodo, as well as the sustainability Test-Site in Otaniemi, where I am part of an urban agriculture project. Observation is conducted in the exploration phase and is used to acquire clearer perspectives of a context from the point of view of individuals (Martin & Hanington, 2012, p. 120; Muratovski, 2016, p 56-59).

I conducted informal interviews with individuals and participated in meetings and discussions regarding urban food production in Helsinki and the metropolitan region. Informal interviews are conversational and can be used to understand personal positions regarding a specific context (Muratovski, 2016) p. 60-61). The informal interviews were used in order to understand the context as well as the challenges perceived by the people practicing forms of Urban Food Production.

Field notes

While I was observing and conducting informal interviews, I kept a diary of field notes in which I documented reflections and insights from informal interviews and conferences as well as from the literature review. Field notes support the research process to document findings and filter data according to the focus (Ritchie, Spencer, & O'Connor William, 2003) p.221). The diary helped in the process of narrowing down and finding a clear focus.

This first exploratory stage was flexible and allowed to familiarize myself with the context and get acquainted with the different participants of the context. The information gathered inspired my research question as it became clear to me that there is potential in the niche of Urban Food Production, yet

it is not visible to the city. Explorative research is a tool that concludes with having clear insights of the participants and the context of interest, the process helps to inspire and guide the next stages of research or the development of a design (Martin & Hanington, 2012, p. 84)

5.3.2. Understanding the context

The exploratory phase supported the framing of the research question and guided the approaches of my research. Next, in the understanding phase I chose qualitative research methods that supported this process. I conducted semi-structured interviews with the producers of the Helsinki Metropolitan Region as well as civil-servants. Simultaneously, I learned about the history of Helsinki through literature review and informal interviews.

Interviews

I conducted in-depth, unstructured interviews to understand the personal stories as well as the challenges the producers have had to overcome. Interviews are useful to gain a clear perspective on individuals' perceptions and context (Ritchie, 2003, p. 36-37). Interviews are also good tools when trying to understand complex system and process reactions, due to the opportunity for in depth conversation (p. 37). My interest is to acquire a clear understanding of the individual processes as well as the motivations and hopes for the future.

Unstructured interviews are more flexible and allow for a fluid conversation, not fixed to a linear structure (Arthur & Nazroo, 2003, p. 111). This means that the questions follow a guide the researcher needs to follow, but the wording varies between interviews (p. 111). The conducted interviews were structured based on key topics and further questions were asked to obtain expected information (Anex 1). A more flexible interview allows for an in-depth conversation in which the goal is to have a deeper understanding of the individual (Martin & Hanington, 2012, p.102). Some researchers doubt the validity of unstructured interviews as the role of the researcher becomes a "co-creator" of the knowledge being generated in the interview (Legard, Keegan, & Ward, 2003, p.140). However, I chose this specific method as it is a reflection of my own practice, being an active member of the urban food production community in Helsinki. By using unstructured interviews, I try to create a conversation rather than having a linear interview, I guide the conversation through the questions and topics I am interested in, but I allow the interview to be flexible and more conversational.

While unstructured interviews allow for deeper knowledge, the data collection process is much harder (Portigal, 2013, p. 8). The criteria and objectives need to be defined prior to conduct the study. The criteria for selecting the interviewees for this thesis was set after defining what an urban food producer is: By urban food producers, I refer to practitioners of primary production, meaning those who transform a seed or spore, to an edible fresh produce. In the Helsinki Region there is a big number of producers meeting this criterion, additionally my objetive was to interview producers that have a vision related to sustainability and sustainable food production.

For a diverse pull of opinions, I interviewed:

- 3 urban gardeners who share the knowledge and consider themselves to be activists
- 4 established companies, considered startups for their engineering and technology-oriented background as well as
- 2 entrepreneurs working and developing the concept of their "startup"
- - 3 "traditional" farmers that practice more traditional and regenerative approaches in the metropolitan area.
- 4 civil servants, one from Vantaa and three from Helsinki, in order to gain a perspective of practitioners working in different City offices who have experience in regards to innovation, planning and food in the city.

In total, 16 interviews were conducted.

To earn a clear view of the "network" existing in the city, I used the "snowballing" method where I asked every person interviewed to recommend someone else to be interviewed. I did this because I wanted to understand the network that exists, and if there is one, and because it was the easiest way to know the niche and the actors I am not familiar with, especially when there is no clear culture or gathering place for producers of the city.

Affinity mapping

To analyze the data collected from the interviews, the audio was transcribed and insights from each conversation were selected. To divide these insights I inspired on the P.O.I.N.T.S. technique used by the Social Innovation Lab, Kent as a workshop tool to gather participant insights (SILK, 2008). P.O.I.N.T.S. is the acronym for Problems, Opportunities, Insights, Needs, Themes and System Challenges (Bennett, 2015, p. 6). I identified each within the interviews and placed the individual insight in color coded post notes: Red for problems, orange for opportunity, blue for insights, green for needs, yellow for themes and purple for system challenges.

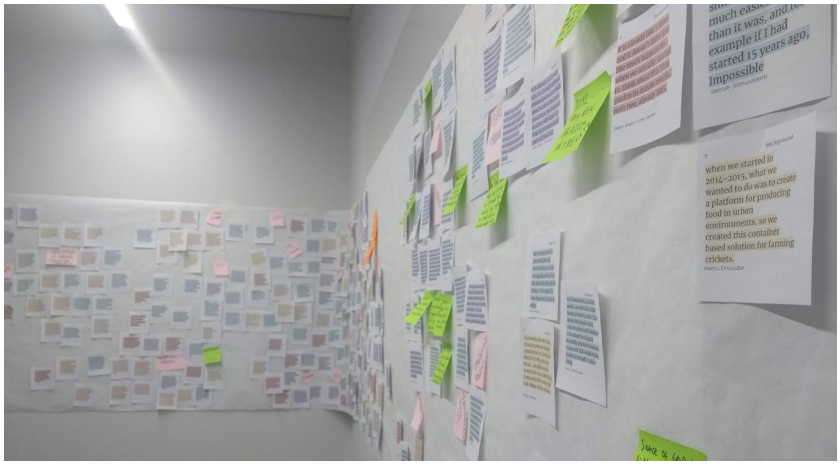


Image 2: Affinity map in process

Once I reviewed and collected the insights from the 16 interviews, the notes were laid on a wall using the Affinity Mapping process. Affinity maps or diagrams are used in the design process to gather insights and find clusters of information that generate specific topics of interest (Martin & Hanington, 2012). The color coding allowed me to identify those clusters that formed patterns that then showed the areas of opportunity (orange and green) as well as the main challenge areas as a majority of red and purple color. Additionally,

a follow up method called T.I.S.I. (Themes, Issues, So what? and Idea) was used to identify general topics. This follow up method is used after reaching an understanding of the topic to then identify opportunities (Bennett, 2015). These were added in additional post notes, pink for themes and so what? ideas in green post notes.

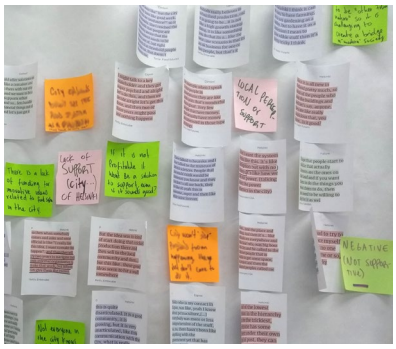


Image 3 & 4: Pictured here are the opportunities in areas on community creation & knowledge sharing (left) and challenge areas in topics with city support & local perception (right)

5.3.3. Materializing

For the analysis of the thesis, I was interested in using the Multi Level Perspective (MLP) created by Rip and Kemp (1998) and then further refined by Geels (2011). The MLP is a descriptive model of the factors that put pressure on a system, destabilize it and create a new paradigm (Rip & Kemp, 1998). It is often used to describe changes that have happened and destabilized the regime, or as a descriptive model to illustrate pathways to sustainable transitions. I use the MLP to illustrate the current factors that are influencing the regime today, and how the sub regimes could adapt to foster a transition in the local food system. With this exercise I reflect weather the MLP can be a tool for designers to make visual representations of a system and create dialogues regarding the current state of affairs of the topic in question. Here I explore the concept of design as a form of activism where the status quo is challenged through a creative expression that creates a dialogue or proposes alternative visions of the world. I think transition design can be a form of design activism, as it has a critical eye towards the mainstream, and it proposes a paradigm shift (Berglund, 2013; Irwin, 2015; Manzini, 2015).

Transition Theory and the Multi Level Perspective

Transition theory is a systematic framework most commonly utilized to understand socio-technical transitions (Geels, 2002; Geels & Schot, 2007; Geels, 2011; Rip & Kemp, 1998). That is, a scheme for understanding how innovations change the way society interacts with themselves and the technology. This being said, many academics in the field of sustainable development have explored the role of transition theory to envision how transitions towards sustainability can be planned (Ernst et al. 2016; Geels, 2011; Haberl, 2011; Kemp et al. 2007; Rotmans et al. 2001; Smith et al. 2005; Gaziulusoy 2015). And even what the role of local governments and cities can be in the process (Hodson & Marvin, 2010; Rotmans et al., 2001). I use previous ideas of sustainability transition and urban transition research to understand how the cities of Helsinki, Espoo and Vanta, together with the current innovators could potentially co-create a local sustainable food system.

As Frank W. Geels (2011) emphasizes, transitions towards sustainability

involve many actors as they seek to find alternatives to complex challenges. These transitions have 3 characteristics):

- They are goal oriented/ with a purpose
- They are not competitive by traditional economic standards and they require a shift of the economic and power structures.
- They require the involvement of big firms who own the industries for a faster and efficient development of innovations.

Therefore, the involvement and interactions of the public sector, the private sector, markets and the culture at large are essential (Geels, 2011). In the context of the HMR I look at diferent actors from different sectors who can potentially have an impact on the Urban Food Production, according to the insights.

The MLP is an analytical framework used to describe transitions as systemic processes that are non-linear in nature (Geels 2011; Rip & Kemp 1998). The MLP is not representative of reality, but rather it is an analytical scheme from which reality can be studied and understood (Geels 2002). As Rip and Kemp (1998) defined this framework, there are three levels in society where these innovations interact, emerge, succeed and be adopted by the mainstream. These are the technological niche or micro level, the socio-technical landscape or meso level and the socio-technical regime or macro level (Geels, 2002; Geels, 2011; Rip & Kemp, 1998). The MLP framework suggests "a bottom-up transition among levels is possible, where radical changes created and implemented in niches can be brought to regime and later to landscape." (De Arruda Torres, 2018, p. 189)

Regime

Regimes are the existing dominant practices or the stable trajectories of technological developments –as well as culture, politics, market, society, science or industry– that create the balance of the socio-technical system (Geels 2002). The regimes are stable because of the lock-in practices and innovations only emerge steadily and incrementally. There are several sub-regimes which are influenced by the niche and receive pressures from the landscape (Geels 2011). In this context, the regime is the mainstream culture at large in which the HMR is part of and it operates in accordance with the cultural dominant practices. To understand the regime, I conducted the initial part of the research where I familiarized with the context at large, then conducted historical research to understand the cultural behaviors and the political situation better.

Niche

The niche is the micro level, conformed by individual actors, companies and movements as well as technological developments and the local practices in place (Rotmans et al., 2001). The niche level innovations have the potential of creating alternative technologies and practices that can disrupt the system, these are the radical innovations (Geels, 2011; Rotmans et al., 2001). Niches develop and emerge separate from the general market and thus are "incubated", enabling for radical innovations and are the seeds for change (Geels, 2002; Schot, 1998). As de Arruda Torres (2018) suggests "they occur in small markets and in specific social groups, dynamic and adaptable experiments can take place in niches, capable of establishing themselves and maturing to the point

of challenging and even modifying pre-established socio-technical systems." At this Niche level I place the different groups that are producing food within the city for a variety of reasons creating a subculture or a Niche. This group is the focus of my study and with whom I have interacted to understand the specific needs, motivations and hopes for the future.

The niche innovations play a crucial role in transformation as it is where new ideas and new paradigms are envisioned (Geels 2011). Governments might support niche development by a process called niche participation (Rotmans et al 2001, p. 31) where different minor grassroot movements and individuals can be involved and support a transformation. In the local context, the niche I study is the practitioners of Urban Food Production in the City of Helsinki who do it as a means of income generation or to raise awareness and contribute in creating a more sustainable food system.

Landscape

The landscape or macro level consists of "deep structural trends" (Geels, 2002). These structural trends are the scenery that conforms society and can be the "demographic trends, political ideologies, societal values, and macro-economic patterns" (Geels 2011, p. 28). The actors within the regime and the niche cannot influence the landscape, but in turn they are influenced by it. A characteristic of the landscape is that the changes occur slowly and over longer periods of time (Geels 2002, Geels 2011). This landscape is what I described at the beginning of this thesis as the background, these are the global pressures forcing the system to change.

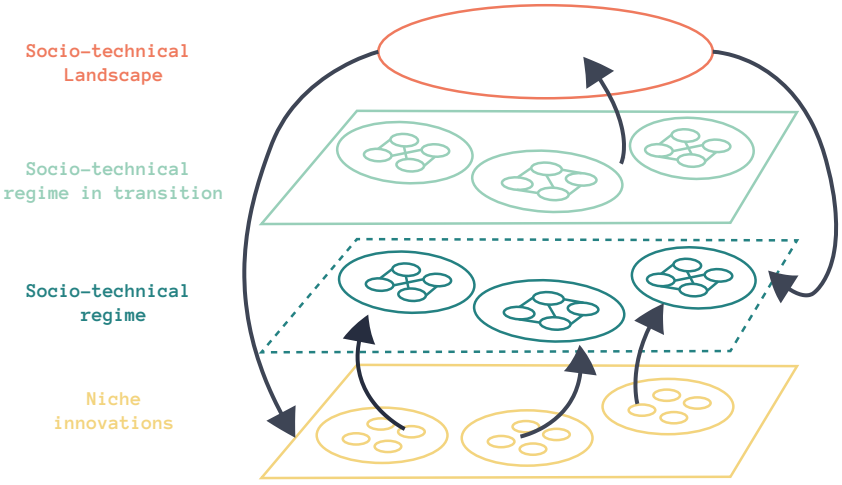


Figure 4. Dynamics within the Multi Level Perspective. Adapted from "*An overview on strategic design for socio technical innovation*" by De Aruda Torres. P.M. 2018 An overview on strategic design for socio-technical innovation. Strategic Design Research Journal, 11(3), 186-192. (p. 189). Copyright 2018 by Strategic Design Research Journal. Adapted with permission.

The MLP framework aids in visualizing and creating an understanding of the current state of the regimes, and how they can be influenced by niches, as well as which are the pressures the landscape is placing on the regime. Manzini (2015) argues that designers can support transitions by envisioning scenarios and design new systems that support innovations to jumpstart and create a new regime (Manzini, 2015, p. 130). Moreover, designers use visualization as a way to raise awareness, amplify stories of the voices that are less heard and create scenarios where the desirable futures are pictured (Manzini 2015). In strategic design, visualization is used in an operational level to bring about change within a specific problem or challenge area (Mok & Gaziulusoy, 2018).

In this thesis my role as a designer is first and foremost to understand and give voice to the Urban Food Production niche. As David Peter Stroth (2015)

indicates, storytelling is a potent tool to generate a system change where the whole picture is presented, creating individual awareness within the system. I use the transition theory MLP as a framework for a descriptive process where I give voice or tell a story of the niche of urban food producers and envision potential interventions that can support a transition. Here, my role as a designer is to provoke discussions by highlighting the stories of actors who remain under the radar (Manzini 2015). In the next Chapter I present the findings from my study.

6.

The Helsinki Metropolitan Region as a place for innovation

6.1. Urban Food production Niche in Helsinki

As I mentioned above, I use the term of Urban Food Production (UFP) to refer to the practice of producers of primary production from seeds or spores into edible produce within the city borders. I use this term instead of Urban Agriculture (UA) or Urban Gardening (UG) because both denominations carry a specific connotation of a specific practice. Traditionally when we talk about UA and UG, it is thought of as a hobby and not necessarily as a livelihood. I have noticed that the producers interviewed have faced challenges with these perceptions and also, I've identified challenges of understanding within conversations regarding my thesis process. A common reaction to my work from citizens and people from the different governmental organization has been that Urban Agriculture is very much alive in Helsinki and therefore not a focus of interest for the city developers and policy makers. Nonetheless, what I have seen in this process is that UFP is more than just some allotment gardens around the city. More than this, it can be a new practice the city can be a place for production, experimentation and knowledge sharing for sustainable development in the food sector.

The people I have interviewed practice a form of Urban Farming (UF) as a way of livelihood, the different profiles bring diverse insights to my research. Below I go deeper into the profiles of people I have identified as the people shaping the niche culture of UFP in the Helsinki Metropolitan Region.

6.1.1. The Niche Actors

The actor groups mentioned below are the groups of people that are practicing food production in the city; however, I only focus on the people that do it with a means further than a hobby, but rather the ones that give back to the system and generate impact. I specify further which are the groups I selected for the interviews

Hobbyists

Two types of leisure gardening are practiced widely in Helsinki and some areas of the metropolitan region. The first type is the allotment gardens, Viljelyspalstat and Siirtolapuutarhat in Finnish, where gardening associations rent out a plot of 10m2 to residents of Helsinki that allows them to grow crops and flowers for self-consumption. The second type is the summer cottages or Kesämajat, where the residents buy a cottage and take care of a larger area of land, where they can grow and harvest throughout the summer (Hagolani-Albov, 2017). In both cases the city is the owner of the land and the people pay a fee to rent the land. This practice is a hobby and the gardeners do not sell their produce, or at least it is not intended for that purpose. While this group is very big in Helsinki, with 42 spots around the city (Elina Nummi, personal

communication, March 28 2019), I did not focus on interviewing people from this group as I was interested in the producers that do UFP as a livelihood, or to focus around raising awareness and the sharing of knowledge. However, I do consider hobbyists as actors in my research as they are part of the niche as they support urban food production in the city.

Activists

Dodo food production action group, Hermanni garden, Berry Guerrilla and individual actors are behind an emerging movement that seeks to bring people closer to nature, address Urban sustainability issues and reclaim the use of urban space. These actors practice some form of UFP as a means to share knowledge and raise awareness. This group brought up questions of the right to the city and the right to nourishment in a sustainable way. For them, a general characteristic is taking ownership of where the food comes from and creating a conversation around the social and environmental unsustainability of the food production system. The movement has been gaining traction with the raising concerns of climate change and next year, 2020 Dodo ry will be hosting an exhibition on Urban Food in Helsinki, at the Helsinki City Museum.

> *"I wanted to mark my city with something good... I saw that in one spot there was a lot of poison berry and so I thought that yeah this is the relative to like raspberry, so what if I would put raspberries and some other berries"*
>
> *"I feel that urban agriculture... is more important in relation to the question of urban space, like who controls urban space"*

Community

These are initiatives that create a community around the practice of gardening; Syötävä puisto at Mustikkamaa, Hermanni garden, Kallio community garden are some examples. These initiatives have emerged with the support of the city, but they must go through a complicated and bureaucratic process to be able to start. Then once they start, they are faced with new sets of challenges, such as how to keep the interest of the members throughout time. I did not interview people in this group for the same reasons as the Hobbyist group.

Business

There are two types of Urban food production businesses, I divide them as Traditional Farmers and Startups:

Traditional Farmers: these are formal farms producing food within the city, such as Stadin Puutarha, Lillklobb Permaculture in Espoo, or the Herttoniemi CSA in Vantaa. These are farmers or groups of farmers that are using traditional and regenerative forms of agriculture and are trying to create a profitable business and share the knowledge. The groups raised questions of farming as a profitable livelihood in the city, a negative public perception of farmers and traditional practices and how vulnerable the practice is for a city that focuses so much on a perception of modernity. It was interesting to see how the perception of themselves as traditional farmers plays a role on how they see themselves as part of a dying practice.

"all the western countries see it where... you know farming is for less bright individuals, farming is nowhere to make any money"

Other producers do it in smaller scale in their own home gardens and sell their produce in the REKO markets, but these are more "informal" and were not taken into consideration for this thesis.

Food production Startups: There are a few examples of these and with a growing interest of circular economy and sustainable production pushed forward by Sitra, Climate KIC and other funds for innovators, more and more entrepreneurs are turning into the food industry. Examples of well-established startups that are paving the way are Helsieni, Entocube or Silmusalaatti. While not all of them have received support from the above-mentioned funds or their accelerator programs, these startups have paved the way, as they have gone through the hardships of being the first in a field which is not regulated or there is no financial interest from investors or even the city. A common topic discussed with this group was that they are trying to prove that sustainable ways of food production can be achieved in the city, that it is hard to find places in the city to produce food and that the products remain luxurious and experimental because of the costs.

"it is this question if urbanized decentralized food production can one day be more competitive than the centralized way out there cuz it would be like a sensible thing for me."

Entrepreneurs

This is the group of people starting a business for themselves who are in the process of developing their idea and starting their own company. This group is similar to the previous or next point, but they are individuals with ideas who are yet to create a company and start production.

Research and development

There are a few startups and initiatives that have created a partnership with the Metropolia University to create an Urban Farm Lab where professionals are researching technologies around urban food production and circular economy. Little Green and Redono are some examples. This "experimental ecosystem" is supported by Sitra and the university, with the idea of creating a closed loop where the resources are reintegrated back into the system, as Riikka Kuusisto (Project manager at Metropolia University) mentioned "one farm's trash is the other one's treasure". These startups focus on circular economy solutions and the practice of Urban Food Production as an alternative to solve environmental and social problems within the city. The projects can create future livelihoods and create rural and urban bridges for more sustainable ways of food production. What is interesting about the project in Metropolia is that an ecosystem of producers is being created and the outcomes of this project can support the Finnish national strategy of creating sustainable alternatives to food production.

Parallel to these producer profiles, I have identified that there are some civil servants who have interest or are actively envisioning and engaging in ways in which the different cities of the Helsinki Metropolitan Region can support the above-mentioned groups. I Interviewed civil servants from Helsinki and Vantaa who have worked or are working with the above-mentioned groups

to gain an inside perspective of what is the work that the Cities are doing when it comes to Urban Food Production.

I choose to keep my interviews anonymous as my intention is to analyze an emerging field rather than the individuals who are part of it. I also have to acknowledge that the insights that I will mention below come from interviews which paint a picture of the perceived problems and challenges, but might not be the reality. My insights might be biased based on the people who I have spoken to and do not paint a full picture of the reality of the current situation. I tried to diversify the opinions I got, but these are the only members who agreed to talk to me. I contacted other people from the city planning and business Finland offices as well as Sitra and Climate KIC, however I could not get an appointment therefore the findings are limited to the actors I spoke with.

6.1.2. Actor map

I have created a map to visualize the network of producers I have spoken to as well as potential actors that can support sustainable food futures in the Helsinki Metropolitan Region. This is to illustrate how the network is interconnected, which means the niche is communicating and aware of the others, however, because of the few actors, the niche is vulnerable to many factors I will further describe in the next Findings.

The map illustrates how there are actors in the 3 cities and for this I analyze the Helsinki Metropolitan Region rather than the individual cities. The case of the HMR is interesting where the cities occupy a relatively small space and have individual characteristics. When talking about the UFP network, I argue, the potential is stronger if the topic is addressed regionally.

6.1.3. What is the niche giving to the city?

The first research question of this study *What is the Urban Food Production niche "giving" or generating in the Helsinki Metropolitan Region to support a transition towards a more sustainable future of food production?* Guided this section where I identify the role of the niche actors in shaping an alternative food production system. Here I present what, according to the interviews, the actors give and generate in the Helsinki Metropolitan Region.

Urban food production in the city is disruptive. According to the interviews the startups do not consider themselves as startups, as they do not fit with the traditional model of growth. The companies doing food production in the city can expand, but the economic impact is not the same as that of a tech driven startup that is profit driven. What I mean by this is that these food startups and companies in the Helsinki Metropolitan Region are not seeking for growth or expansion, but rather to create a paradigm shift in food production and seek for more sustainable ways of production, as well as engaging with customers at a more personal level.

- Traditional farms
- Food startups
- Research and development
- Universities
- Community gardens
- Supporters
- Potential supporters/collaborators
- Environmental organization

Figure 5. A map of the Helsinki Metropolitan Region with the location of the actors and potential collaborators of the niche of Urban Food Production.

"... it is not like a high growth startup thing, (...) the best case scenario is that its an ok business for one or two people, but that's it, unless you are doing it as a means of creating a technology platform that can be scaled into other cities, then it might be interesting But most of the people who want to do this, like, people who are interested in urban farming they might want to start a small company to grow potatoes"

"We are called startups, but we are not really startups and we do not work like startups"

The companies and groups doing urban food production are generally creating a community of knowledge around them. By this I mean that most of these companies are sharing the work that they do and the knowledge they gain with interested followers. By doing so they create a community around them that becomes interested in the topics they are addressing, they create relationship bonds with these people and create practices of knowledge sharing and knowledge creation 'coordinating individual actions and insights' (Fletcher, 2014, p.352). The practices go from engagement in social media channels to workshops or informal events. The UFP initiatives also integrate or seek to integrate communities, creating connections with people of all ages, backgrounds and nationalities.

Products are local, more flavorful and nutritious. The products we find in supermarkets are chosen to have longer shelf lives, compromising quality, flavor and nutritional value, opposing this, products grown locally generally offer a greater diversity of species, and are more flavorful. The restaurants are very interested in these products as they are very different from what they can find in the general market and this is starting to create a new food culture where the quality of the product is at the center of the food we eat, much like it happened in other countries where chefs are more interested in local products.

Producers are also creating a network where together research and development is carried further in the attempt of creating a more sustainable way of food production. The Urban Farm Lab in Metropolia University is still a pilot, but if the project is successful, the knowledge generated in the University could not only be used in the city, but potentially in rural areas where the circularity of food production is already being tested. But not only this, the Urban Farm Lab can potentially inspire other entrepreneurs to seek for innovative knowledge driven solutions to produce food that are relevant for the latitude of Finland. This means that the Urban Farm Lab has potential to address the targets the Food 2030 strategy has envisioned.

Finally, it seems that the more traditional forms of food production practiced by urban producers seek to demonstrate that technology and traditional knowledge can give way to sustainable production. The producers who practice more traditional and regenerative ways of farming are realizing that even though they might be the most sustainable when it comes to the impact they have; the perceptions of this modern society make their success limited. They see themselves as "the rare exceptions" that show an image of the past, however, if we want to have a sustainable future, we need to acknowledge the value of traditional farming. And by this I do not mean going back to the past, but rather learning from the past for a more sustainable future.

6.2. Findings

Here I will present some findings, according to the 16 interviews. I define the participants as innovators working towards a sustainable local food system. They were interviewed about their motivations, experiences and ideas of the future. These results are based on their opinions, but they describe the challenges and needs of these niche actors.

Even if forms of Urban Agriculture have existed in Europe since the 1700's, as a result of industrialization (Bell 2016), what is commonly understood as Urban Gardening today and what is happening in the Helsinki Metropolitan Region (HMR) are new practices. All the interviewees mentioned the activities have started no more than 10 years ago with the more traditional and experimental ones. As for the emergence of food startups, these innovations are very recent, not more than five years. This means that UFP in the city is quite new, when excluding the traditional allotment gardens that already exist and have hardly changed since the 1950's.

With new practices and industries, there is always an adjustment time. The city organizations of the HMR do not support the innovation of the UFP sector; however, I have identified ways in which the cities of the HMR in partnership with different national departments and agencies could provide better support to an emerging field.

6.2.1.Opportunities and challenges

The HMR presents opportunities to foster innovation, but the cities also pose some challenges to a sustainable food production transition. Geels (2002) categorizes seven dimensions of the socio-technical regime: policy, technology, market and user practices, infrastructure, industry, culture and techno scientific knowledge. I am inspired by these dimensions to create the categories according to the identified context, and I will use them to describe the challenges and opportunities; Public sector, Market, Technology and Culture.

There are previous efforts of creating a "food ecosystem" in the City of Helsinki. The city envisioned Teurastamo as the location back in 2016, but because of unknown reasons the project did not succeed (possibly due to administration changes). However, this effort was not in vain, as the project *planted a seed* and led to the creation of an experimental "Urban Farm Lab" in the Myyrmäki campus of Metropolia University of Applied Sciences. Like this, other efforts have occurred and some changes can be perceived; however, the regime is still the same and problems like the previous one might continue to occur without the acknowledgement of the challenges.

Public sector

This might be the most critical dimension that is posing challenges to UFP in the HMR. From legislation to land use planning, many factors are blocking or slowing down potential developments that could support a transition.

Regulations for production of food and disposal of waste that have to do with Evira, the Finnish food safety authority, do not consider the production of food in the city or disposal. The lack of regulations means that the

production of food, especially if it is not executed traditionally on a plot of land, can be slowed down or even discouraged. However, having regulations is not always the best approach, as some interviewees mentioned that, with inflexible regulations in an experimental field, it can be hard to innovate and the regulations have to be more flexible or experimental.

Similarly, because of regulations and procurement, local producers have a harder time complying with the terms and conditions of supermarkets, which ultimately means there are no channels for producers to sell. In this respect the Finnish Consumer and Competition Authority (FCCA) must not only consider local producers and regulate what type of products are prioritized but also create strategies providing better conditions for producers to reach their customers.

Regarding investments, Finpro ry is the organization that promotes Finnish industries to foreign investors. Finland is known for its gaming and tech industry, which receive most of the foreign funding, but when it comes to food production and food innovations, the industry is small and finding investors is challenging, as also attested by my interviewees.

An opportunity for governmental agencies in this regard would be to work together with the innovators. In the case of producers, Evira, FCCA and Finpro would have to work with producers to create better policy and support systems that encourage innovators and their particular processes.

Land allocation and land use policy poses a big problem for producers in the city as there is no designated space for agricultural practices, farming or growing food. In the HMR there are three cities with three different offices that address these issues: Urban Environment Division in Helsinki, Land Use, Building and Environment Department in Vantaa and Technical and Environment Services in Espoo (with two different committees that look at buildings and city planning). This poses a very complex challenge where three cities with different departments would need to develop a strategy to foster innovators. As for Espoo and Vantaa, they are more flexible since both cities have considered supporting producers and there is designated land for agriculture (even though it is scarce). When it comes to Helsinki, the experiences of interviewees are that the city does not allocate for these forms of innovation and ultimately producers have been forced to move outside of the limits of the city where it is easier for them to continue their work.

> *"I called around to different officials in Helsinki, Espoo, Vantaa, ask about you know could they try to help me to find a place where to get started? Helsinki was like "no, we don't have any", so Espoo was already different they said they had some fields outside far away, but at least they had someone who knew about being a farmer in the city"*

Ultimately, when it comes to the public sector of the HMR, there are no clear strategies or goals that address food matters other than the reduction of food waste or attempts to incentivize for more plant-based diets. The interest and will to make a change are there. In the interviews it was mentioned that the reaction they have received is positive but the problem arises when it comes to making things happen. Interviewees raised the need for a food strategy that addresses the issues of producing food in the city. I would go further to encourage the creation of a committee like the one in Gent or

Toronto, which allows public sector to engage with local organizations and producers to create better strategies to directly support a transition for more sustainable ways of production and consumption.

Market

In Finland there are three main supermarket chains, S group, Kesko and Lidl. These three chains have strict terms and conditions which are in line with a model of supply that makes it easier for middle men to operate, but harder for smaller producers to sell products in these stores. However, in Finland, because of FCCA, some smaller local producers have access to selling their products at the stores. Nevertheless, because of the supply models of retail stores, it is very hard for urban producers to have access to selling in a supermarket, due to, for example, access to cold storage or even the logistics of supply.

For this reason, other more grassroots forms of reaching customers have appeared. REKO markets are informal gatherings in which the producers sell their products. Pro Localis is another organization that coordinates a farmer's market in Helsinki throughout the summer and autumn of 2019, as an alternative channel for producers to sell their products. A third form is the app developed by Uudenmaan Ruoka through which customers can order products and pick them up at two different locations in Espoo and Helsinki.

Diversity in market options can be healthy for the economy as it makes the system more resilient. However, when it comes to the producers, the alternative grassroots options mentioned above have not yet reached mainstream markets and it is still hard for producers to find channels to reach more customers. One of the outcomes of this is that the prices of the goods offered by the local producers cannot compete with the supermarket prices, thus remaining as luxury products. If the system is to transition, this needs to change. The first step in this direction would be to make it easier to the general public to access the products, and second, to change the public procurement system to support more local and sustainable ways of production.

Lastly, the creation of food startups and businesses producing in the city is disruptive. Startups are supposed to be innovative and groundbreaking business ideas that can escalate and grow. When it comes to 'food startups' specifically, they do not consider themselves as such because the models of operation do not follow the same steps as a startup. These businesses that are being tested are not profitable in the same way that a startup. The models can be replicated, but it does not mean that they will generate growth. Instead, these startups provide an alternative economy that generates a stable income but does not have a vision of growth. The companies are doing it expecting a paradigm shift, or taking matters into their own hands when it comes to sustainable production alternatives.

Technology

In 2018, the Finnish National Fund for Research and Development (Sitra) together with Metropolia University, a group of food innovation startups and the city of Vantaa introduced the "Urban Farm Lab". The lab is a prototype for research and development on circular economy solutions in the food sector. The goal is to generate an urban food production ecosystem in which the

outputs of one industry are the inputs of another. This offers an interesting alternative through which knowledge developed in academic institutions is being tested for a sustainable development in the food sector.

Not only this, innovators are testing existing technologies and experimenting with what is being developed globally for local solutions to the food industry. In this respect, Helsinki plays an interesting role with many universities developing technologies, and now they can be tested locally. As one interviewee pointed out, the technology that exists today is not the same as five years ago. Back then, ideas of urban food solutions were merely conceptual, but today they can be put into practice because of the availability of new technologies.

Culture

In Helsinki, the Cultural and Heritage division is responsible for both leisure activities from the youth to the elder, and the historical value of locations. In this respect, the production of food indirectly concerns governmental departments that deal with these issues. Historically there was land designated for agricultural activities closer to the city and as industrial agriculture models emerged, the land went further away from the city, where land is cheaper and it is safe to use fertilizers and chemicals. One of my informal interviewees pointed out that traditionally land around the city of Helsinki, what is now Espoo and Vantaa, as well as well as some areas within Helsinki were used to feed the city. The reason why I study the Helsinki Metropolitan Region is because there is potential for a model like this to still be developed. The three cities share borders and need to partner up to develop regional strategies that benefit the whole population.

As mentioned in Chapter 3, Urban Agriculture creates many cultural values in cities from the integration of communities to education and sharing of knowledge in regards to nature values. Some of the organizations I spoke to are aiming to bring these same values to the city or creating them as an outcome of their work, particularly those activist groups and traditional farmers who engage with the community and attract curious people who then start engaging and experimenting with Urban Agriculture themselves. These individuals who engage are actively looking for these projects.

However, a big challenge that the more traditional producers come across is that in urban areas around Finland there is a general perception that farmers are slowing down the economy, that farmers are old fashioned and should all together not exist. Eeva Berglund's (2007) hypothesis is that this mindset originated when the government-led image of Finland transitioned from forest nation to information society back in the 60's. This notion is problematic for producers, but the example of a government-led public perception shows that these ideas can be reverted.

Another challenging perception that is probably linked to the previous one is that people in Helsinki believe that nothing can be growing in Finland because of the cold conditions. While the season is limited, there are still five snow free months, which means that there is still potential for a highly productive season.

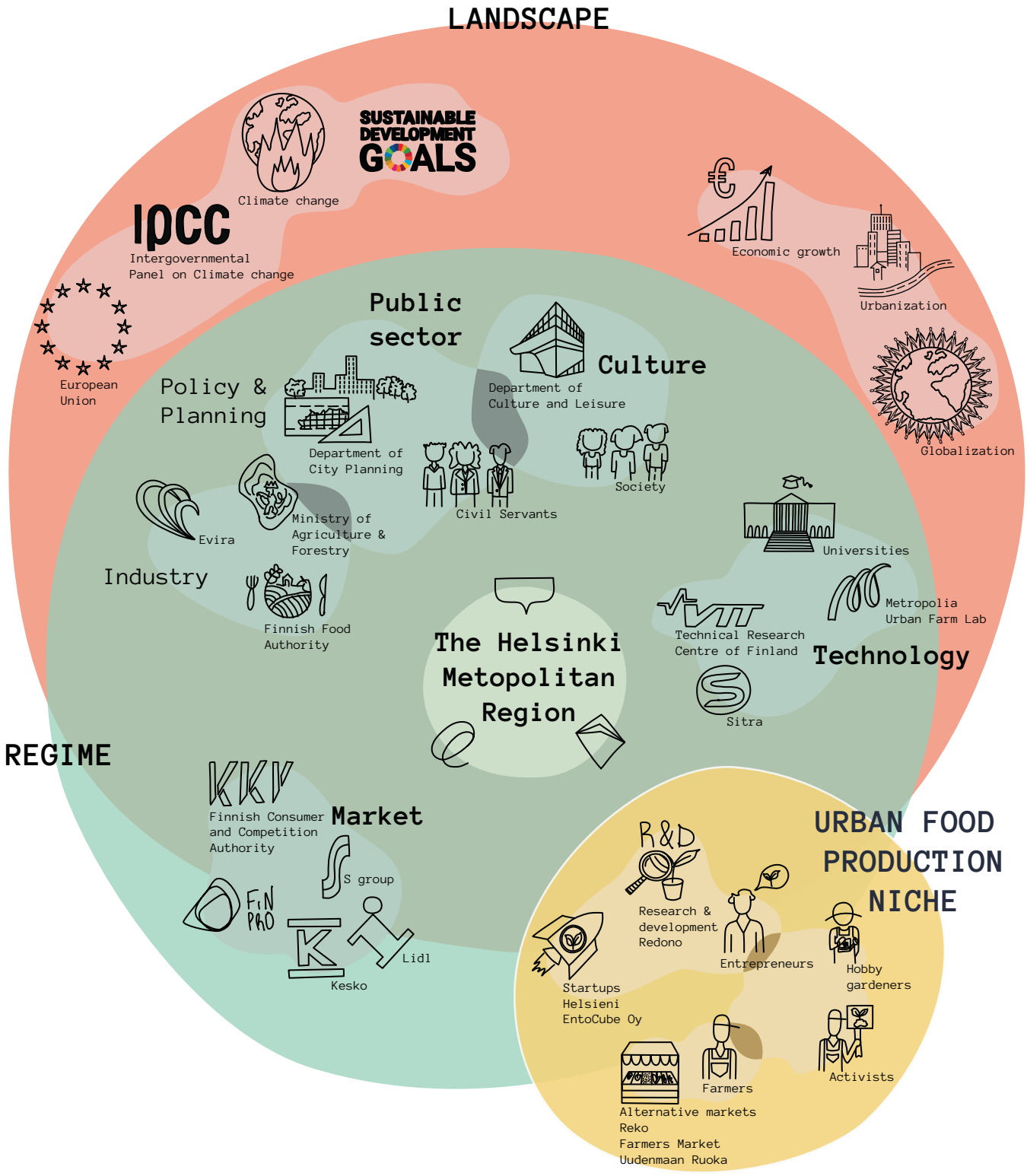


Figure 6. The actor map of the Helsinki Metropolitan Region according to the Multi Level Perspective framework where the landscape factors put pressures on the regime and the niche actors seek to influence the regime. In the regime it is pictured the actors who have potential to support a transition but are at the moment not necessarily engaged.

Lastly, in a modern society technological fixes seem to be the expected solutions to all the societal problems. There are apps being designed and very crazy technologies being tested, such as potatoes growing without soil, using nutrient rich water solutions and led lights. This has incredible potential for growing food year-round inside the city. However, the problem is that techno-fixes are not straight-forward solutions. There is a global need for systemic fixes, which is why transitions towards sustainability and transition management play a key role. A paradigm shift in which knowledge is used to create transitions for society must be created in order for the regime to evolve.

6.2.2. Discussion

My second question "*How might the urban food production niche influence the planning and policy making of the HMR for sustainable transitions of food production and consumption?*" looks at the ways in which the city can adapt to foster innovations in food production. I look into the niche, regime and landscape to understand the pressures and influences as well as how the HMR can strategize to create a fertile environment for food production within the urban environment.

Providing incubation for the niche innovations

As discussed in Chapter 5, niche innovations are the *seeds of change.* They are radical innovations that can disrupt the system as they propose a new paradigm. These innovations emerge separate from the general market and have the potential to experiment in a somewhat small and controlled environment and, with proper support and incubation thrive and change the current regime.

The urban food production niche in the HMR is a social network with a common vision, to work towards more sustainable ways of food production. This niche offers the opportunity to create a regime change. Still, to gain traction, the niche needs to expand the network, be supported and enhanced, especially by powerful actors (Geels 2011). This means that for the Niche to gain momentum in the HMR, a support system needs to exist.

The city of Helsinki's administration states that the city "*supports local initiative and cooperation among residents and communities.*" (Helsinki City, 2018c, p. 11). While examples of these are easily found as the city explores participatory methods, the case is not the same when it comes to the emerging practice of food production in the city. From the interviews this is something many agreed on –from civil servants to entrepreneurs and activists, the projects that are going on are happening in spite of the city, and some even have been discouraged from working in Helsinki.

> *"They said that it would be easier for everyone if I would move to Estonia to do this"*

There are support systems for producers, such as Sitra or Tekes who provide financial support. Nonetheless, this is not true for all producers, it is easier to acquire financial support if elements of technology and circularity are integrated to the marketing strategies, than if production is carried using a more traditional practice and discourse.

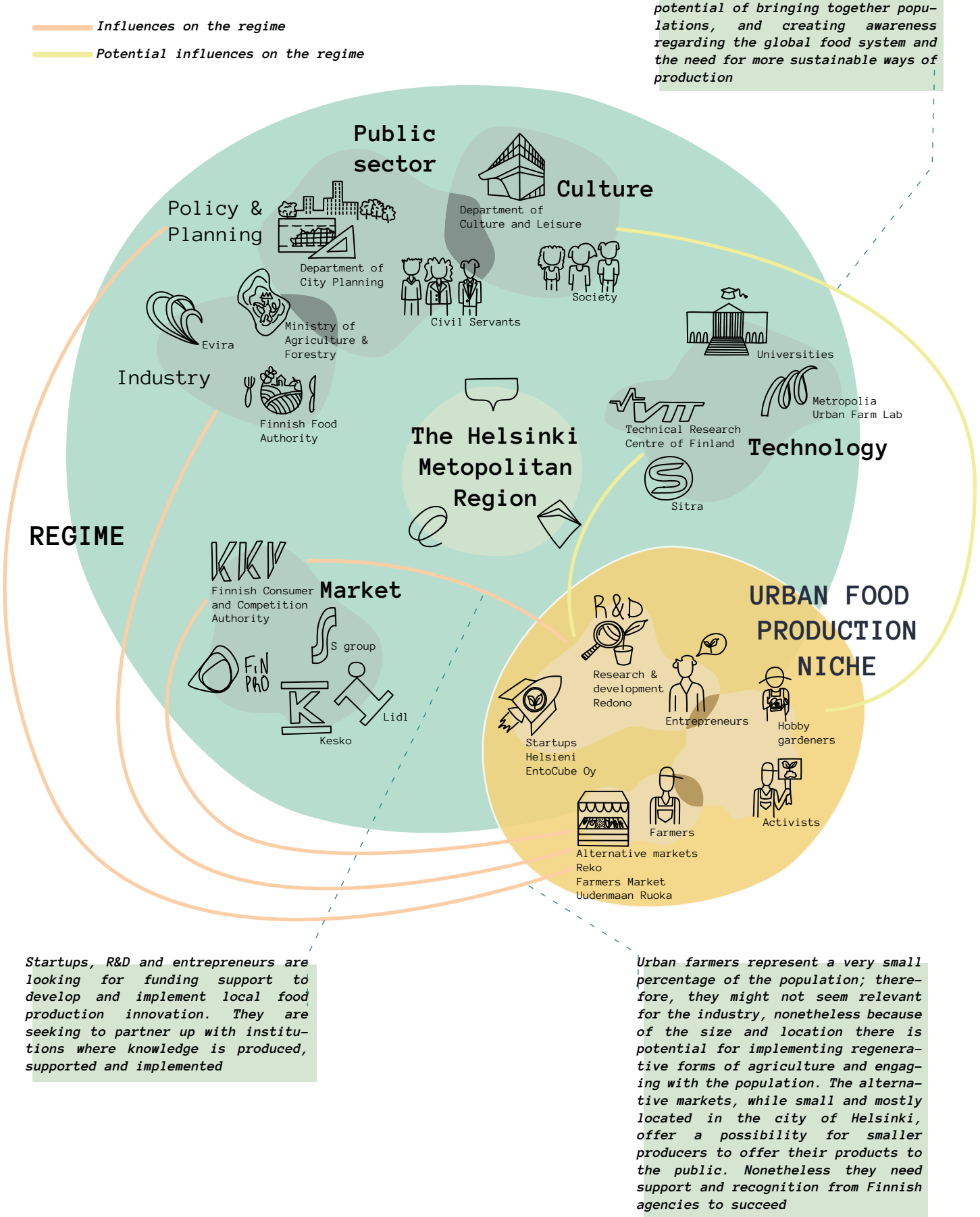


Figure 7. A visual representation of the influences the niche is having or seeking to have on the regime

However, if we look at the Helsinki Metropolitan Region, there seems to be more interest from Espoo and Vantaa to find ways to support Urban Food innovations in particular. Most of the producers operating at the moment have moved the operations to either of these cities, as they have received more support in the form of cheaper rents, flexible regulations, or even with the creation of the new programs and experiments that directly or indirectly support the research and development of food production. The Urban Farm Lab by Metropolia University in Vantaa and a production and demonstration site in Kera, Espoo where an old storage unit is to be repurposed as a production facility to be an international example of circular economy (Espoo, 2018). Both examples are very interesting, yet they remain at experimental level and they do not offer solutions or support to the growing diversity of innovators that focus on challenges of food production and consumption.

As for the market as a way to reach customers, the city is able to provide ways for producers to reach the public. While Reko or the new farmers market are good initiatives that show the need for these systems, the truth is the systems are still under threat. In the mainstream, there is no easy way of reaching customers and the only traditional way to do so, the market halls, have very expensive rent prices that make it impossible for small producers to sell their product in.

In transition management the idea of co-evolving is stressed, where policy makers, strategists and organizations steer the transition (Kemp et al.2007). For the HMR authorities and departments such as Evira, FCCA, Finpro Sitra and Tekes, together with the city planning offices and even culture and health departments are influencing the success –or failure–of the niche. For Helsinki, Vantaa and Espoo, and for the Urban Food Production niche, a support system is needed. There is a need for a strategy to give a framework for civil servants and national organizations to understand how to support innovations and give them the tools to do so.

Examples of cities which have successfully created a support system for UFP innovations are given in Chapter 3.2. Gent and Toronto are cities which, by creating a council focusing on topics related to food (from nutrition to supply) both cities have created impact and supported initiatives for food production. Each case is different and the cities resourced to do this work for different reasons, but what both of them have in common is that both cities implemented a working group with decision makers and with people working in the field to directly plan and create strategies to support the change.

The need for a strategy was underlined by several interviewees, however a strategy without a clear action plan and a process to measure progress is not enough to successfully foster a transition. To combat this, having a working group that addresses the niche challenges and works with the niche is a viable solution.

The landscape pressures to the regime

The landscape is the macro level and consists of all the external factors that put pressure on the regime, in this case, for the city. These pressures are global trends, political ideologies, economic models or societal values.

The HMR is receiving global pressures in opposite forces, but when it

comes to food, there are many global aspects that might put pressure on the city. First off is the need to act upon Climate Change in the form of the Sustainable Development Goals (SDG's) where pressures to develop more sustainable ways of living are considered central in urban environments. Second, the latest IPCC Report on Climate Change and Land (2019a) shows that change can only be achieved with local action, which means that more local strategies need to be put under action. Third, a global trend is emerging where there are more examples of cities embracing urban food production. But lastly, a pressure that pushes the regime in an opposite direction is the economic model which seeks for growth and is said to be contradictory to sustainability.

"Cities cannot –and should not– implement these techniques alone. Collaborating with farmers, and rewarding them for adopting these beneficial approaches, will be essential. In parallel, cities can use circular urban farming systems, such as those that combine indoor aquaculture with hydroponic vegetable production in local loops." (Ellen MacArthur Foundation, 2019 p.10)

At a national level there are two main pressures that have to do with food production, the National Food Policy 2030 and the Finnish food authority, and the efforts to make Finnish food the most sustainable and ethical in the world (MMM, 2016) In the policy report, the importance of the involvement of all actors of government is underlined, however at Regional level, the aims of the policy seem to be lost. In the Helsinki Metropolitan Region, there is no local strategy, plan or committee that focuses on food and the only efforts are targeted at encouraging citizens to adapt more vegan and vegetarian diets, or at reducing food waste (City of Helsinki, 2018b). The efforts of the Policy and the authority are targeting rural areas, missing the potential of urban and peri-urban regions. In transition theory, the importance of an agreement between local and regional policies is underlined (Hansen & Conen, 2015) and the local collaboration of organizations and government is fundamental (Hodson & Marvin, 2010). While there is a Finnish Food Authority as well as a Food Policy Committee at a national level, the Helsinki Metropolitan region is not considered, leaving niche innovators in the city out of the strategy efforts and in a vulnerable position. Sitra is also involved in a project to create regional systems of production that share best practices and focus on circular economy, but this too is only looking into rural regions and leaving out the Uusimaa region altogether.

When it comes to innovation, Helsinki as a hub tends to support the gaming industry, artificial intelligence innovation and virtual reality. Slush is said to be the top startup event in the world, where every year entrepreneurs gather to present and talk about tech-innovations that will tackle the biggest problems of today (Slush, n.d.). A-grid, Aalto university's innovation hub offers a community of innovators with expertise in nanotechnology, space exploration or VR/AR for games and product development (A Grid, n.d.). Even in Metropolia University (where the Urban Food Lab program is being implemented) the slogan is "expertise and insights for the future" and behind it pictures of a self-driven vehicle and a person using a VR headset (Metropolia University, n.d.).

This being said, it seems that the entrepreneurs working in urban food production have not had an easy journey. In fact, many of them mentioned the fact that startups tend to be more technology oriented and the interest of investors and the different support channels tends to focus more on startups that work in the game or energy industry. The only time the entrepreneurs I interviewed have succeeded is when marketing their projects as circular economy solutions, even though generally speaking, UFP has a dimension of circularity and resource repurposing.

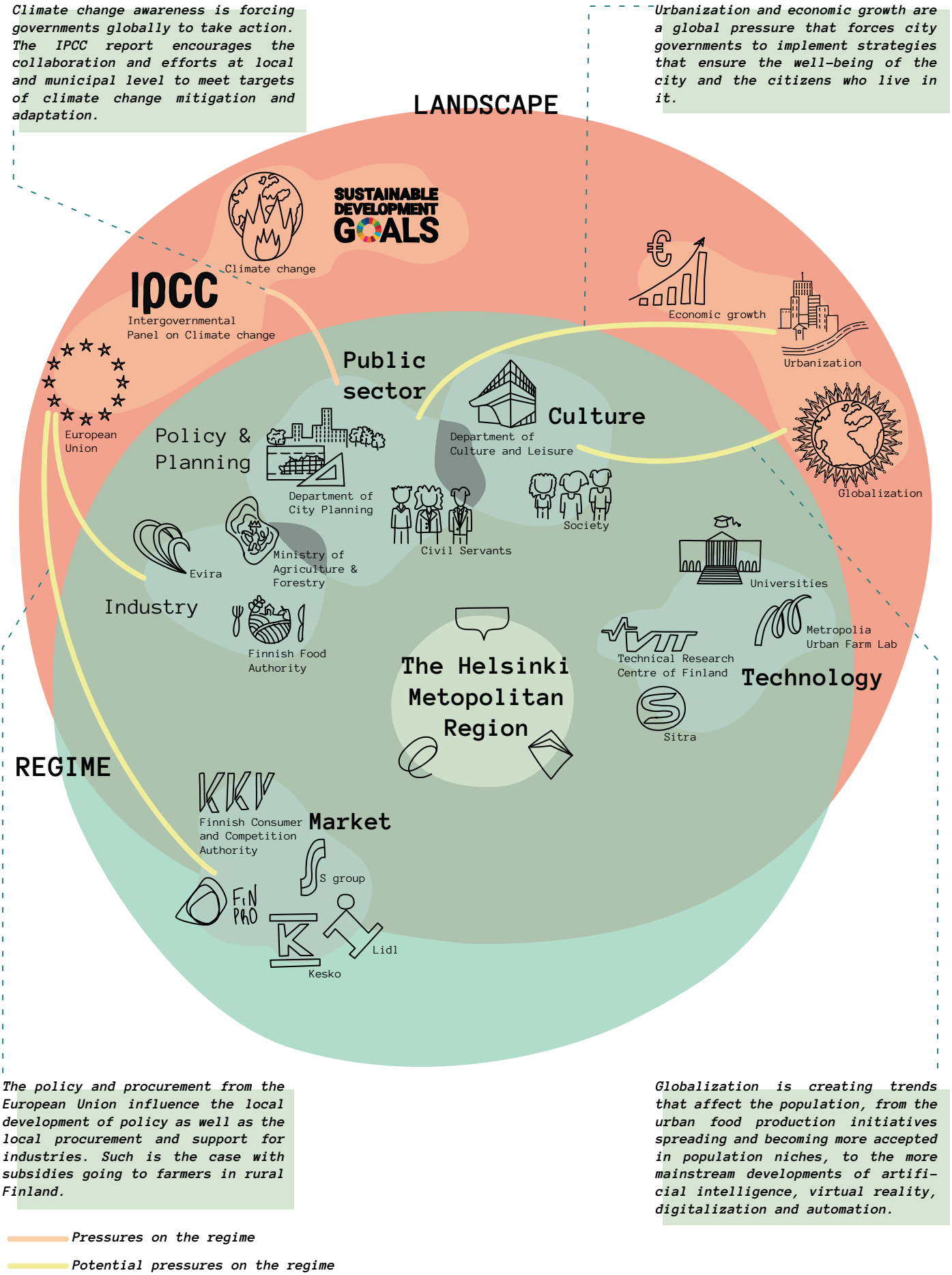


Figure 8. A visual representation of the pressures that the landscape puts on the regime

"with farming it's a bit strange to call it a startup, because startup originally means that this kind of thing is scalable. This is a disruptive thing..."

It seems that Circular Economy is being taken as the only driver for success in waste generating industries, and there is a feeling that if all waste streams are reintegrated into the system, then we will reach sustainability. Circular Economy is necessary, repurposing waste is fundamental for creating a better future and the new technologies and innovations in the field are very promising. Nonetheless, Circular Economy is not the only solution and it seems problematic that if innovators don't brand themselves as circular, then they have no chance. The problem of only focusing on technological solutions to solving sustainability problems is that this generates a techno-fix. A techno-fix is when the issues are targeted "in isolation, disregard systemic intervention opportunities, and while seemingly solving a problem at a point in a system, only transferring that problem to another point" (Ehrenfeld, as cited in Ceschin & Gaziulusoy, 2016, p. 134). In other words, focusing on one solution to address all challenges might create other problems; the thinking and understanding of the problems must be systematic to successfully create new paradigms. It is not necessarily about having more companies that focus on Circular Economy, but rather creating the infrastructure and the society with circularity in mind.

Francisco Valenzuela and Steffen Böhm (2017) exemplify the problems with circular economy as a techno-fix with the example of Apple. The successful company depends on customers throwing away their old phones and computers to buy the latest versions, but they can be guilt free because these devices are designed to be recycled (p. 25). While the company is in fact designing the products for a "zero-waste" model, the company also seeks growth in a capitalist economy, which Böhm and Valenzuela argue is counterproductive (p. 30). Circular economy is needed, however, as clearly argued by the researchers, regulations and policies must change, particularly in when it comes to economic models, to allow for more circular futures.

As Eeva Berglund writes "*Finland is, after all, routinely represented as a bold, new information society, where anything is possible if everyone does their bit and if the (virtual) capital is available (...) in Finland as elsewhere, flesh and blood seems to be losing out to robotics, environmental sustainability to economic competitiveness.*" (Berglund, 2008, p. 411) Finland is a society that focuses on the future, rather than the past. But in the future, humans will need to eat the same way we have done in the past, therefore focusing on alternative sustainable systems of production is a thing of the future too.

With this research it became clearer to me that with a need for sustainable solutions, there is a need to re-think the practices of urban dwellers, and with-it things like the future of work, and what is thought of as a normal job for a person living in the city. The producers that were interviewed agreed on this, either as a way of preserving a practice, or as a way to figure out a profitable business while experimenting with more sustainable ways of production. All of them had in mind the idea that being a food producer should be a profitable and respected business within a city, the same way that it should be in the countryside.

In the city strategy, efforts of using the skills of immigrants as ways to

reintroduce them to the working force are evident. Many models can be adapted to use the different skills immigrants have, especially in the process of integration to the Finnish culture. One of the interviewees is trying to develop a system to integrate immigrants who already have an interest in food production with a very interesting model that would help people integrate into Finnish culture faster, however her efforts are slowed down as there are no clear paths, financial support or supporting regulations that would allow for a project with social innovation drive. The biggest problem for her seems to be a business model that seeks for social and environmental wellbeing before economic growth.

The strategy 2030 clearly is focusing on steering the food industry towards a sustainable one, but why is it so hard for niche innovators in the city –especially those who want to reinvent the way food is produced– to actually generate the impact they envision? Will Helsinki adapt to the pressure or is food production a practice that should be left to the suburbs and countryside?

Transitions happen slowly and the regime changes over time from the pressures of the landscape and influences of the niche groups. The Helsinki Metropolitan Region is not the easiest place for an entrepreneur to explore new UFP alternatives, but there are more examples of support today than there were five or ten years ago. This is something most of the interviewees agreed on.

The regime

Can the city support a transition?

The regime is the existing dominant practices, in this case I define the HMR as a key regime with lock-in practices that are stable and need to transform for sustainability. Hodson and Marvin (2010) argue cities as organizations cannot support transitions as generally, they are part of the regime and this lock-in practices. However, I believe the city can support transitions, but the values and strategies need to be in line and be reflected on the actions. In the case of the HMR, there is a culture of experimentation and a drive to make the cities more sustainable and functional for the inhabitants, for this reason I believe the city can foster transitions by implementing plans, goals and regulations that support change.

In the Helsinki City strategy, it is mentioned that the city offers the use of public space and cultural space for diverse activities that enhance the interaction of its inhabitants and examples of Oodi and Bunkkeri are given (City of Helsinki, 2018c, p. 7). While the city does designate spaces for urban gardening, a general trend in Europe is that such spaces are under pressure as the need for development grows, thus the land use is changed to fit the needs of a city that grows in population (Bell et al. 2016). For the master plan of Helsinki 2050, the goals when it comes to green areas is to preserve the cultural heritage and recreational natural areas.

The same thing happens with the land use planning, as the need to densify the city grows, the planning priority goes to the densification of the urban grid and this puts pressure on the land allocation. Land that used to be designated for agriculture or recreational gardening changes and it becomes harder for urban agriculture to find a place. One of the civil servants I spoke to that works in the planning of recreational gardens assured me the allotment gardens are very popular and will not be taken for the development of other infrastructure unless necessary. Nonetheless, with the traditional urban farmers I spoke with they all mentioned how complicated it was for them to find land for commercial purposes and how they see themselves as the rare lucky exceptions. Traditional farmers can no longer find land in the city and

are under threat.

The land allocation of Helsinki City today has no agricultural land left, and in the case of Espoo and Vantaa, the areas are further from the city and the pressure on the real estate is making it harder for farmers to have profitable businesses, forcing them to sell to developers. If the land use policies remain the same, urban farmers will only be able to provide high end products, only reaching a small portion of the population, without a real opportunity to enhance more sustainable ways of food production (Angotti, 2015).

But not all food production needs land, roofs or underused spaces in the city could be used, such as tunnels and old industrial areas. Unfortunately, the rent is generally very high within the city of Helsinki and unlike many startups, the ones that produce food, do need the space where to produce, and they are forced to operate in Espoo or Vantaa where the land is cheaper. This is an insight to be taken into consideration, there is potential for Vantaa and Espoo to provide support, but agreements need to be reached between the cities. And as I mentioned previously, farming in a society that is becoming more urban should be also a profitable livelihood in cities.

Innovation support changes with every government period, this is one of the biggest challenges of transitions towards sustainability. There must be independent organizations that carry the work further. In 2016 an initiative to start a new food ecosystem was envisioned for Teurastamo, a Food Hub. But with the change of government the plans faded out and the project was left on hold, as a result all the potential projects faded away. Fortunately, not all efforts went to waste and from this the producers that participated created a network; Now some of them are part of the experiment of Metropolia and Sitra, the Urban Farm Lab.

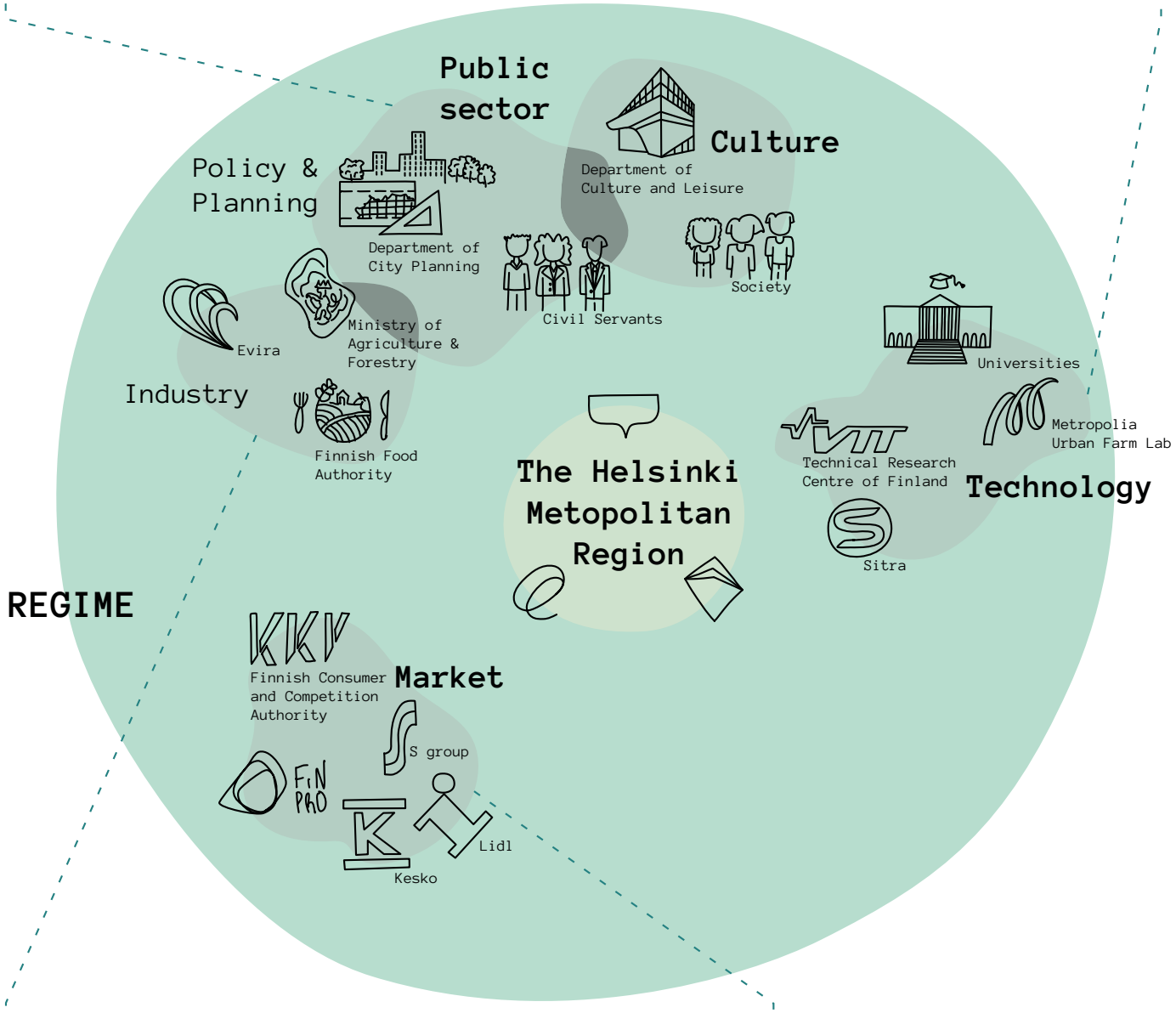
People in Helsinki might want the change, but markets policies and subsidies most foster these

In the Helsinki city strategy, it is stated that the City of Helsinki is "a place for learning for people of all ages" (p. 9) and that the promotion of physical activity, especially of elder people, is to be enhanced. Urban gardening can be utilized as an experience for learning about food production and transforming individual behaviors of not only children, but adults too (Davila & Dyball 2015). It can integrate communities and give opportunities for leisure for people of all ages, from youth to the elderly (Angotti, 2015). But not only this, urban gardening can also help with segregated communities, which is a growing problem with suburban areas and the urban sprawl (Okvat & Zatura, 2011).The allotment gardens in the city provide a great opportunity to do this for individuals, but as the system is showing, there is a need for more gardens as the waiting lists are long and not all citizens have access to the allotments for a variety of reasons (Hagolani-Albov, 2017).

Community gardens and traditional farms offer an opportunity to provide these services to citizens. The three farms I spoke to are creating a community of knowledge around the values of sustainable food production and are attracting citizens to engage from small workshops to random events where people are able to to visit the farm and even experience for themselves how

The planning of the city is good at making the city more efficient and functional when it comes to energy and transportation, nonetheless the food availability is not integrated to city planning. These can be seen in the lack of land availability for food production within and in the outskirts of Helsinki. Land allocation and policy regarding food production need to change to support urban food production.

Metropolia University, together with Sitra, the Finnish National Fund for Research and Development are supporting research on urban food production innovation. They are setting an example for other universities and this is a first step into supporting niche development.



Market accessibility is not easy for small producers and the smaller markets that do support small producers have a hard time reaching out to customers. It is hard to compete with the big supermarket chains and they are not established and have no support channels.

Initiatives such as the food 2030, the food committee or the Finnish food authority attempt amongst other things at achieving sustainability in the food sector. However, the industry is limited to rural areas and the urban development is overlooked.

Figure 9. The regime of the Helsinki Metropolitan Region

the food is produced.

According to a survey carried by Sitra (2010) people in Helsinki want to buy more locally produced food, but the mainstream channels to access produce are missing. The only available options which are Reko markets, the farmers market and the Uudenmaan ruoka app and pick up point are very small and under threat. One of the main reasons why they are under threat is because customers have to do extra efforts to find these channels and go out of their way to buy local products. The city organization could support the formalization of these markets or even provide spaces for local producers at the several market halls around the city.

> *"...I am producing food in a city and I have... we all have a general interest of doing it, I mean there are many different ways to do it. I do it the traditional way... and I think also the... many people citizens have a general interest in these issues nowadays so it is kind of bit growing, the movement."*

The Helsinki City carbon-neutral action plan focuses on the consumption patterns of its citizens and is intended to encourage more plant-based diets by promoting vegan and vegetarian menus in schools and restaurants. These kinds of efforts, as Angotti (2015) underlines, fail to engage the city's diverse neighbourhoods. Instead, an effort should be made to engage and support the scaling-up of more local ways of production.

In traditional terms, R&D happens in a controlled laboratory or environment, with scientists or experts spending a company or nation's resources on the development of a specific product. Pablo Marcel de Aruda Torres (2018) argues this is changing or transitioning from a top-down innovation mode (landscape putting pressure on the regime), to a more collaborative bottom-up process –Niche innovations influencing a regime change, where not only users are involved, but they take part or design the innovations themselves. An obvious example of this is the emergence of startups that has been seen in the past decade, and UFP startups are a small part of this trend. If the way in which innovations emerge is already known, it is beneficial to have support systems for these innovations to emerge and thrive. Finland, and especially Helsinki and Espoo have carried a substantial effort in fostering startup culture, but this is not reflected in the feeling of the interviewees, where most mentioned they have felt resistance from the public sector when trying to operate. A few of them who identify or would enter the category of startups mentioned that they have felt as if they are working against the city in many ways, where there is a constant delay process in matters related to the city administration.

De Aruda Torres further suggests that innovations are shifting paradigms from the traditional thinking where mass production is thought of as the pillar to wellbeing. Instead, bottom up innovations are creating a shift in paradigm where wellbeing comes from the collaboration and interaction of communities (De Arruda Torres, 2018). UFP in the most traditional sense provides new and alternative ways of interacting and sharing knowledge and information for both the people behind the practices as well as the consumers who engage.

To sum up, the evidence suggests there is a need for shifts in policy planning and regulation in the HMR. But for the transitions to gain traction the

integration of citizens as active actors of change is imminent. Many citizens are taking actions however big or small as responses to the unsustainability of the local food system, as well as a common sense of urgency. On top of this more people in cities are considering livelihoods around the production of foods, and the alternative of moving to the countryside to do it is not an option for every urban dueler. As Tom Angotti (2015) clearly puts it "While it requires changes in policy from the top down, it also requires continuing engagement from the bottom up, involving people and communities as subjects and not objects of change" (p. 340).

6.2.3.Possibilities for transformations in the system

A strategy and a council focused specifically on food in the city, would give more concrete guidelines to not only support a transition, but also to make things happen when it comes to the national food strategy and the Helsinki city Climate action plan. I argue this is needed to set a pathway for action that creates a unified understanding of the needs that producers have, help monitor success and iterate, much like the examples in the benchmarks.

With a clear strategy and a council to carry further, the city can:

- Set guidelines for how to produce sustainably in the city, making it harder for entrepreneurs to align with legislations and regulations that are currently slowing down the work.
- Figure out and define spaces in the city where UFP can be practiced both indoors and outdoors at a commercial scale.
- Clearly define what types of food production are subsidized, and understand procurement supports sustainable transitions, as well as incentivize more sustainable ways of production.
- Create better legislations that make sure local products can be sold at the local markets and supermarkets.
- Help make the prices of locally produced food more accessible to the general public.
- Create a support system that makes the process of researching and starting a profitable business in UFP easier and more efficient.
- Have people who want to develop UFP work together and create a network of action beyond an experiment within a university.
- Support all forms of food production, not only those that use new technologies, but also research more regenerative forms of food production that are suitable for the local weather.
- Be more able to solve the needs of the people producing the food (examples of these are providing space in the Tukkutori fridge for small producers, or even supporting partnerships and research that allow to create better tools, such as tractors that fit the needs of farmers, not machines that farmers have to adapt to -quote interviews).
- Control what types of foods are consumed in the city and whether or not the foods that are imported are sustainably produced.

- Experiment with health and leisure activities as well as other ways of teaching sustainability.
- Address the barriers that prevent UFP from being a profitable livelihood in the City of Helsinki.
- Address issues of land ownership and rights to the city.

7.

Conclusion

7.1. Reflection

While Finnish society is a modern driven information society (Berglund, 2007) and we can see this in the many technological developments when it comes to urban food production, it is recommended that bridges between traditional farming and technology are built. At the moment, there seems to be the high tech startups reinventing urban food production, aiming to use urban underused spaces to grow food for the city, and on the other hand we have the smaller more traditional urban farms that make an effort to preserve traditions as well as apply new more regenerative and innovative ways of doing farming, such as Community Supported Agriculture (CSA), mixing traditional farms with more intensive technological solutions or even using Permaculture farming principles. I see potential for all of these projects, but one thing that worries me is these all should be supported by better and reinforced urban strategies, which at the moment are lacking.

The findings suggest that at the moment this technology and information driven society is or has been creating a division of the community in urban spaces. The interesting thing about urban farms is that it brings people together for a cause. One of the most interesting aspects of the urban farms is that it creates communities of diverse people from very different backgrounds and age groups that come together to share one activity and nature enables it to happen. In the city strategy, one of the main things mentioned is the importance of people coming together, inclusion, and activities for the elder. Urban farming be it in a CSA or in an automated system inside a container, has the potential of making this happen, but the city must act as a platform to support these initiatives to take place. As one of my interviewees puts it, adapt technologies to farmers, not farmers to technologies. (making reference to the tractors that have forced farmers to shift practices in (sometimes) inefficient ways that put the machine at the center of the practice).

It would be interesting to reflect on what we think of as technology. Somewhere along the ideals of modernity the appreciation and value of traditional and simple technologies has been lost, and it has been taken over by automatization, VR, AR and so forth. These technologies can be beneficial to humanity in many different ways; however, they should not overpower the basic human nature. We do not depend on technology, technology makes our lives easier, but it also makes them harder. While I support technological developments being applied to agricultural practices (such as monitoring growth, development and health of crops, or automated self-watering systems) we must not forget we are working with nature, and there are reasons why things are the way they are in nature. “Nature” is regenerative by design, and we must not take it for granted or undermine that if we want to build sustainable societies, it is essential to understand that we are part of the system of nature. I come back to this point in the next section.

Shove and Walker (2010) make a point that the MLP is only looking at the material aspects of innovations and transitions, however it is crucial to note the mental models, the routines and the emerging trends that influence the behavior of citizens. They remind us that citizens are not only users of a given strategy, but they are a part of the system in the same way the people who design or operate the system are (Shove & Walker, 2010). In the attempts

of making the city more sustainable, the concept of Smart City lacks the engagement of citizens, I argue that it is fundamental for cities to engage with individuals and the creative economy, not as a platform that allows innovation to happen, but that engages with innovators to co-create a sustainable future.

However, transitions can be planned or designed but the outcomes are unknown and it is fundamental to consider what the current trends are, who are the actors and what are the values that govern the trends and innovations (Shove & Walker, 2010). For the reasons mentioned above Kemp, Rotmans and Loorbach (2007) stress the importance of transition management strategies for the design and development of technological transitions (Kemp et al., 2007).

There is no one solution in solving a complex problem and urban agriculture is not the solution to solving the challenge of the agricultural system, however by investing in and supporting Urban Food production, new innovations and understandings of the challenges might emerge. But if not for this, supporting and allowing urban food production to thrive creates diversity in a Market/ system that cannot sustain itself for longer on its own.

The latest Climate Change and Land report by United Nations released in August (IPCC, 2019a) warns the readers about all the challenges the world will face as food becomes scarcer, and the most affected nations will be the poorest ones. There is no one solution to the challenge that is unfolding as we cannot predict how things will turn out. But one thing is clear, every country needs to take responsibility for its own consumption and how this affects the countries which resources are being depleted. Finland being one of the countries with the highest consumption rates per capita (Country overshoot days, 2019) needs to develop strategies that not only reduce emissions, but that no longer support the unsustainable production practices of the industrial agriculture. Industrial agriculture might not be the most pollutant and worrisome at first glance, or if we look at the statistics on carbon emissions, however, food is one of the only necessities humans actually have, over electricity and transportation and it is the one that is the least addressed. By looking at the climate action plan of the Helsinki region for example, more focus is put onto the reduction of energy consumption and the most efficient ways of transportation or the less pollutant, but little to no planning is being made when it comes to food supply, production and consumption.

In Chapter 3.2 I present some of the studied benefits of Urban Agriculture to a city, and I further argue it is multifunctional. Studies have shown that citizens who become involved with Urban Gardening have radical changes in lifestyle, they exercise more, eat healthier and engage with a community (Viljoen & Bohn, 2014, p.43). These are some aspects addressed in the Helsinki City Strategy where it is mentioned that special focus is to be put in the engagement of elder communities and the youth, as well as the promotion of exercise (City of Helsinki, 2018c; Davila & Dyball, 2015). The Carbon-Neutral Action-Plan addresses the consumption habits of Finns being too intensive and that through five different education programs the population will be taught about the necessary steps to reduce the citizens carbon footprint (City of Helsinki, 2018b p.90). I argue that by creating a program to engage citizens in Urban Agriculture activities, together with the reflexive conversation of

other topics such as carbon emissions, citizens can not only understand the carbon footprint, but also understand where food comes from, how long it takes for products to grow, and how challenging it is for farmers to work with a changing climate (and maybe this could help reduce the food waste).

The topic of this thesis is utopian in the sense that I try to make a case for the regime to support niche actors that, under the current circumstances, have little to no value to the regime. By this I mean that the UFP niche has no value under neoliberal terms, and the model of modern cities sees no worth for practices that do not create growth. I make a case for UFP being beneficial for the city, however the benefits cannot be seen in the neoliberal model of the city as profit making.

Bringing food production closer to the city is about awareness, it is about empowerment of local communities and it is about integrating people back into the system as active members of a solution. Sustainable transitions need to integrate members of society as active players rather than as passive consumers of whatever mainstream trend it is, we need to adapt into.

7.2. Learning results

Since I started my studies in Creative Sustainability, I have tried to understand my identity as a designer, specifically, what is it that I want to do as a designer and what are my skills? In the objectives I laid down these questions because it is something that I struggled with, I am a creative person, but my profession and upbringing had always been very practical and objectivist. The Creative Sustainability programme gave me the tools to integrate values, understandings of the world, theories and a creative process towards a constructive practice; with this thesis I wanted to integrate these and learn how to do a practical project with a theoretical background.

Another topic I played around with and debated was what is design research and what is the process of design research. With this thesis I realized research is an important part of design. I realize the skills and tools designers use in the design process are what makes it more “designerly”. This reflective research process, or as the Dolan A. Schön refers to it, reflection in action (Schön, 1983) led me to understand my skills as a designer, as well as how the process of designing is research. In this case a constructive epistemology where the world is understood and co-created.

A big part of this exploration on design skills and methods was to learn how theories of sustainability can be integrated in the process. I’ve had a particular interest in the transition theory and the multi-level perspective, which have been used in design to create pathways to sustainable futures. The work of Idil Gaziulusoy for example, explores the role of designers in systemic transitions towards sustainability. She has been involved in projects where low carbon urban futures are envisioned (Gaziulusoy & Ryan, 2017) or exploring the application of transition towards sustainability and strategic design to envision a sustainable practice for aquaculture where present and future concerns align (Mok & Gaziulusoy, 2018). With this thesis I wanted to understand if the same theory can be used to paint a picture of the problem today rather than creating a pathway or a vision. My (ambitious) objective

is to raise awareness and create a conversation around a topic that is rarely addressed in urban planning. Part of the motivation that led me to follow this path came from the exploratory phase of the research where the most common answer to my questions of urban food production in Helsinki pointed towards a perception that the city is already doing enough by having allotment gardens around the city.

Here two different but equally relevant topics come to mind, which represent the biggest learnings for this thesis: (1) The role of urban food production in the city and (2) The use of the MLP as a framework. I present them in two separate topics below.

Urban food production in the HMR

As mentioned above, the motivation for this thesis came from my perception that there is little to no progress in the HMR when it comes to urban food production. I familiarized myself with the research and opinions of academics on Urban Agriculture as a tool for urban sustainability, where topics of food sovereignty (Navin & Dieterle, 2018), the right to urban space and the integration of communities (Block et al., 2012) or even the connections to the land and empowerment of communities (TEDx talks, 2014) were addressed where food production in the city can be a tool. These topics are very relevant for me, but I notice there is a big focus on "the developing world" and poor communities adapting UA. I see a lack of studies that focus on the relevance of UA in "developed" countries.

Nonetheless, my motivations on this topic had to do with the empowerment of civil society for a sustainable transformation, and I realized that the case of Helsinki was different because of the specific cultural context. In Chapter 4 I analyze the context and look into the cultural differences as a way to familiarize myself, yes, but also as a way to understand what makes this context different. A major reflection comes from the realization that the local identity is grounded in a forward-thinking mentality. I address this previously and I want to come back to it, I come from a culture where our historical traits and traditions are ingrained in our sense of being, Mexicans look at the future by reflecting on and inspiring from the past. Finland is the opposite example where a common cultural agreement is that Finnish people do not think of the past as it is bloody and painful, here people think about the future and how to make it better.

Similarly, Finnish people think of technology as high tech scientifically developed and highly engineered solutions that eventually could support society to live in Mars. Whereas Mexicans use both technologies from the past and the present to find creative ways to solve challenges at hand. We don't undermine a low-tech solution, such as the chinampas referred to in Chapter 3.2, a technology developed four thousand years ago that still productive today (Mougeot, 1994, p. 3). I make these exaggerated generalizations to exemplify that different interpretations of the world come up with different solutions. I won't argue which one is more sustainable although I worry that the forward-thinking ideals that are present in most cities around the world (Mexico City included) create disconnections from the understandings of the interconnectedness of humans with the environment which one could argue is part of the problem we find ourselves today.

This being said, in the presentation of my findings I highlight how the disconnection with the food strategy 2030 and the developments in the HMR miss an opportunity to use the technologies developed in the city (both high-tech and low-tech) for a transition to a sustainable food system and thus achieve the goal of being the most sustainable producer in the world.

Lastly, I want to bring up the fact that very often in Finnish slogans in government agencies as well as universities, businesses and organizations the goal is "to be the best in the world" "to be the next Silicon Valley" or "to compete with so and so". I find this problematic because instead of focusing on the individual and personal characteristics that make this pace special, the competitive mindset is, to me, trying to paint an image of something that is not there and is not real.

The MLP as a framework to represent a system

This very different point presents my reflections on the use of the MLP as a tool to represent a system visually. As I point out in the introduction, the MLP is not a realistic interpretation of the world, but rather a framework that "represent dynamic patterns in socio-technical transitions" (Geels, 2011, p. 26). While the framework supported my analysis and enriched my understanding of the different systems within the regime that need analyzing (not only the policy regime, but the techno-scientific regime, the user and market regime, the cultural regime and the industry regime) it was a rather difficult task to create the visual representation Initially I wanted to visualize the interactions between the "levels", but I quickly realized this was not possible, without creating a mess of arrows and lines that did not represent the problems in an intuitive way.

In order to make the MLP framework work for this purpose I had to make a map of the actors first and then place them in these conceptual "levels" which is also not an intuitive process (and the landscape "actors" are rather conceptual as opposed to the niche actors which can be very clearly defined). This example shows that the MLP inspired the maps instead of being used as a framework, previous understandings of mapping systems supported my process to create the final visualization. This being said, the MLP is a very useful tool to a systemic process that supports the understanding of a system in a conceptual level, and then helps the user go deeper into the different aspects that can conform the network of actors, but it is not enough to understand and visualize a system, a previous understanding of systems thinking is needed to support the process.

7.3. Limitations

There is little research in regards to urban food production and transitions, as most of the literature looks into energy supply or lifestyles. Only a few examples are looking at food production. This proved difficult as I had no frame of reference to work with. The problem with using transition theory for food systems is that with the current capitalist model, food systems are not only socio-technical systems, but also socio-ecological systems and this is a topic that has not been researched or discussed deeply in transition theory.

A second limitation was the time I had to do the research, the availability

of the actors and the interest of these actors to participate in interviews. If I would have had more time I could have spoken to a more diverse group of actors for the interviews and then conducted a workshop in which the insights gathered from the interviews were corroborated by the members of the urban food production niche.

Lastly, the Language barrier is an obvious limitation for most foreign researchers studying the Finnish context. For me the biggest challenge came when looking for information regarding the history of Finland. Secondly, when reaching out to people the individuals who agreed to be interviewed were limited as not everyone might feel comfortable with using English. Lastly, I believe the differences in language and cultural understanding present a barrier where something said in my English with a Mexican background might be interpreted differently in Finnish. Because of this limitation I could only talk to a limited group of population and the perspective I represent in this paper might be biased by a specific point of view or opinion.

7.4. Further research

A thorough sustainability assessment of the most sustainable ways of production for Helsinki is needed to determine what forms of UFP would suit the HMR. The same way, a sustainability assessment to determine what crops are the least resource demanding to be grown in which of the alternative systems. For example, tomatoes grown in Finland in greenhouses could be very resource intensive because of temperature, water and light requirements that the plants have. Further, a study that looks into the metrics of food production in the HMR would be very interesting to determine how much food can be produced, how much carbon can be sequestered in the urban allotment gardens or even what are the benefits that every different form or UFP brings to the region.

In the book Second Nature Urban Agriculture, Katrin Bohn and André Viljoen analyze economic aspects and business models of UA projects and point out that for example farmers take more time than other enterprises developing the skills as well as perfecting the production model (Viljoen & Bohn, 2014, p. 40). It would be interesting to perform a similar study for the businesses and startups that emerge in Finland and how the weather can play a role in the process.

Throughout the thesis, both from formal and informal interviews, the notion that UFP is disruptive to the current economy and business models of the food markets was brought up. A study on degrowth as well as other decentralized or alternative economic theories, and the role urban agriculture play in regards to alternative economies. Such study could give light into how the current food production system can transition from a capitalist model to a new paradigm in which the economic values are equally important to social and environmental wellbeing.

In regards to the Multi Level Perspective framework, further research is needed in order to determine if this can be used as a methodology. With more transition thinking being embraced, more tools are needed to determine best practices when it comes to attempting a transition towards sustainability. This

thesis is an attempt to utilize an existing framework to map the actors that could be involved in a transition. Nonetheless, the framework has potential to analyze transitions over periods of time, understand the forces that could prevent a transition from succeeding or even design pathways to sustainable futures. The variables and possibilities are many.

Lastly, a series of workshops could be carried where both the producers who participated in this study, as well as city planners and policy makers would co-create the next steps in order to have the most suitable solution so that there can be a strategy in the Helsinki Metropolitan Region that supports the national strategy to become the country with the most sustainable food production system by 2030.

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Appendix 1

Interview structure

Interview Producer

Before we start

This interview is for my thesis project, where I am trying to analyze the reasons behind urban food production in Helsinki –in the context of a broken urban food system. In order to understand what the future will look like in the context of Helsinki. I am interested in the motivations of people who produce food locally and the stories behind why they are doing it.

Background

1. What do you do as an urban food producer?
2. How did you start and when?
3. Why do you do it?
4. What has been your biggest learning?
5. What has been your most unexpected learning?
6. Has the situation changed from when you started?
7. Do you share the knowledge you acquire? Why? And how?

Helsinki

8. Why do it in Helsinki?
9. Do you think the city policy and city strategy support you?
10. What would you require from the city and it's legislations

The network

11. Has this allowed you to meet similar people?
    a. Would you say there is a network of urban food producers?
    b. If so, in what level and what are its characteristics?
    c. Why do you think are other people doing it?
12. Do you see this work as part of a "movement"?
    a. Does it follow any philosophies/ trends/ theories?
    b. OR Do you align/follow any?
13. Do you think it is evolving?
    a. How?
    b. Do you like this change?
14. What would you say are the benefits of urban food production?

The Future

15. What are your hopes for the future?
16. What is preventing that future from happening and what would allow for that to become a reality?

Interview Civil Servant

Before we start

This interview is for my thesis project, where I am trying to analyze the reasons behind urban food production in Helsinki –in the context of a broken urban food system. In order to understand what the future will look like in the context of Helsinki. I am interested in the motivations of people who produce food locally and the stories behind why they are doing it.

Background (warmup and introduction)

1. Tell me a little bit about your work and how/does it relates to urban food
2. Why do you do this work?
3. Has the situation changed from when you started?

Helsinki

4. How are the city strategies supporting practices of urban food production?
5. Are there any strategies to encourage this?
    a. If so, what are the drivers?

City History (if relevant)

6. Can you tell me a little bit about what you consider to be the most important aspects of helsinki's urban food history?

Research context

7. Has Your perception of sustainable food systems changed?
    a. Would you say there is a network of urban food producers?
    b. If so, in what level and what are its characteristics?
    c. Why do you think are other people doing it?
8. Do you see this work as part of a "movement"?
    a. Does it follow any philosophies/ trends/ theories?
    b. OR Do you align/follow any?
9. Do you think it is evolving?
    a. How?
    b. Do you like this change?
10. What would you say are the benefits of urban food production?

The Future

11. What are your hopes for the future?
12. Will you encourage more practices of urban food production? If so, why and how?
13. Do you think think urban food production will change?
14. What do you think needs to happen for urban food production to evolve?
15. How do you think urban food production is being supported and by who?
16. What is preventing urban food production from spreading out and becoming more widely practiced?

Appendix 2

Consent form

Name and topic of the research project: Urban food systems for socio environmental transitions.

General description of study method: This is an interview where a set of questions are answered to understand motivations of participants, as well as their personal experiences. The information presented will be analyzed to find patterns and might be referred to in Andrea Gilly's Masters Thesis.

Purpose of the study. This study analyzes the motivations behind Helsinki citizens who are involved in urban food production. The goal is to understand why people get involved, how this practice has changed and how it is growing. This to give light to what is being created behind such practices.

Time commitment: Participation in this interview will take from 15 minutes to 30 minutes.

Voluntary participation: Participation in the study is voluntary. You have the right to discontinue participation at any time without obligation to disclose any specific reasons.

Food production in Helsinki and what does it mean for those who practice it

I……..……agree to participate in the research study on Helsinki's urban food production.

I have understood that the topic of this interview regards urban food production in Helsinki, and the information discussed during the interview will be used exclusively for Andrea Gilly's Master Thesis Research.

I understand that my participation in this interview is completely voluntary and that I have the right to discontinue my participation at any stage without any consequences.

I give permission for the interview to be audio recorded.

I understand that I can ask to take a break at any time during the interview.

I understand that the interview content may be used and published by Andrea Gilly for her Master's Thesis at Aalto University.

Anonymity preferences: For publication, I allow the following to be used:

[YES / NO] My name . If no, I understand that content and quotations from my interview may be used, but without my name or disclosing information that reveals my Identity.
[YES / NO] My organization's name . If no, I understand that a pseudonym will be used in place of my organization's name, without disclosing information that reveals my organization's identity.

By my signature, I confirm my participation in this interview and agree to volunteer as a study subject.

RESEARCH PARTICIPANT

Date and Signature	Andrea Gilly
……	……

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Appendix 3

Affinity diagram- Sample of insight analysis

Pictured:
Green- Needs
Purple- System Challenges
Yellow- Themes
Red- Problems
Blue- insights
Orange- Opportunities

A!

Aalto-yliopisto